



19th Real-Time Conference

May 26th – 30th, 2014

Nara, Japan



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Every other year, the NPSS Computer Applications in Nuclear and Plasma Sciences Technical Committee (CANPS) organizes the Real-Time Conference, which brings together experts from various fields in need of real-time data taking or processing. The participants typically come from high-energy and nuclear physics, astrophysics, nuclear fusion, and many other related fields with new fields always encouraged.

Typical topics at the conference include data acquisition and trigger systems, bus and crate standards such as ATCA, timing systems, and also new developments from experiments or facilities.

This year's conference will be held in Nara, Japan, from May 26th to the 30th. It is organized by the University of Osaka, the RIKEN Research Institute, and the KEK High Energy Accelerator Research Organization under the chairmanship of Masaharu Nomachi. The conference rotates between North America, Europe, and Asia, with the most recent meetings held in Berkeley, CA; Lisbon, Beijing, and Batavia, IL (FermiLab). This year,



the conference returns to Asia for the second time. This small conference typically attracts about 200 participants, which makes it ideal for discussing ideas and results among peers.

The conference consists of oral plenary presentations and poster sessions. Following a long tradition, each poster presenter can give a two-minute oral of the poster, which makes it easier for the audience to select posters to which to pay special attention. This is also a great educational opportunity for young participants to present and promote their work in front of a friendly audience.

The conference location, which is 30 km due east from Osaka and about 400 km from Tokyo, will be lovely and warm in May, with lots of things to explore. Nara was once (from 710 to 784) the capital of Japan, and has a rich cultural heritage,



Masuhara Nomachi,
RT 2014 General Chair



including traditional Japanese shrines and temples and several museums.

The conference venue is the Nara Prefectural New Public Hall. The center is located in a park and has several modern meeting rooms and a large auditorium, in addition to a Japanese-style garden. There are many nice hotels close to the conference center.

The conference is followed by a week-long summer school, where students can get hands-on training in Real-Time applications under guidance from key experts in the field. Younger participants are especially encouraged to apply for the school.

We are looking forward to seeing many of you in Nara in May. The registration deadline is April 23rd. For other updates visit our web site:

<http://rt2014.rcnp.osaka-u.ac.jp/>

Masaharu Nomachi, the Chair of the 19th Real-Time Conference, can be reached by E-mail at Nomachi@rap.osaka-u.ac.jp. Conference questions can be addressed to: rt2014@rcnp.osaka-u.ac.jp.

CONFERENCES Continued on **PAGE 2**

2014 IEEE Nuclear and Space Radiation Effects Conference

Finalizing Technical Session Plans for Paris

The 51st IEEE Nuclear and Space Radiation Effects Conference will be held July 14th - 18th, 2014, at the Paris Marriott Rive Gauche Hotel & Conference



Center. The conference will feature a Technical Program consisting of ten sessions of contributed papers (both oral and poster) that describe the latest observations and research results in radiation effects. In addition, a Short Course will be offered on July 14th, as well as a Radiation Effects Data Workshop, and an Industrial Exhibit. Engineers, scientists, and managers who are concerned with radiation effects will attend the conference. International participation in the conference is strongly encouraged.

TECHNICAL PROGRAM

The Technical Program Chair is Véronique Ferlet-Cavrois, ESA ESTEC. She and her technical committee will be selecting contributed papers that describe the effects of space, terrestrial, or nuclear radiation on electronic or photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits.



Teresa Farris,
Vice Chairperson

The Poster Chair is Jean-Luc Leray, CEA DIF, and the Data Workshop Chairs are Farokh Irom, JPL, and Stefan Metzger, Fraunhofer Institute.

Teresa Farris may be reached by E-mail at teresa.farris@aeroflex.com

THE TECHNICAL SESSION CHAIRS ARE:

Basic Mechanisms of Radiation Effects: Hugh Barnaby, *Arizona State University*,
Dosimetry: Arto Javanainen, *University of Jyväskylä*,
Hardness Assurance: Sana Rezzgui, *Linear Technology*,
Hardening by Design: Gilles Gasiot, *STMicroelectronics*,
Photonics Devices and ICs: Scott Messenger, *University of Maryland*,
Radiation Effects in Devices and ICs: Simone Gerardin, *University of Padova*,
Single-Event Effects: Mechanisms and Modeling: Nathaniel A. Dodds, *Sandia National Laboratories*,
Single-Event Effects: Transient Characterization: Daisuke Kobayashi, *ISAS / JAXA*,
Single-Event Effects: Devices and ICs: Daniel Loveless, *Vanderbilt University*,
Space and Terrestrial Environments: Eamonn Daly, *ESA ESTEC*

Conference Reports

2013 60th IEEE NSS/MIC and 20th Symposium on Room-Temperature Semiconductor X-ray and Gamma-ray Detectors



Hee-Joung Kim,
General Chair

The 2013 60th IEEE Nuclear Science Symposium, Medical Imaging Conference, and 20th International Workshop on Room-Temperature Semiconductor X-ray and Gamma-ray Detectors were held for the first time in the Asia-Oceania region, in the beautiful and historical city of Seoul, Korea, from October 27th to November 2nd, 2013 at the spacious and modern COEX Convention Center. Our theme for the conference was "Beyond Imagination of Future Science." Very interestingly, it was the 60th anniversary of the Nuclear Science Symposium and the 20th anniversary of the Workshop on Room-Temperature Semiconductor Detectors this year. Accordingly, Korean traditional ceremonies were arranged during the conference to congratulate them. There were 2369 registered attendees from 48 countries, including 1875 overseas participants and 1661 presentations out of 1846 abstract submissions. Particularly, more than 38% of the attendees were from Asian countries: 18.6% from Korea, 14.6% from Japan, and 5.2% from China. The US attendees were about 19.0%, and about 8.2% of the attendees came from Germany. The conference also had a commercial exhibition and the 80 booths were all sold out to 67 companies, which was a conference record. These numbers confirm the success of the conference held for the

first time in the Asia-Oceania region. Earlier this year, the organizing committee members were very concerned about the conference when there were increasing tensions between North Korea and South Korea. Approaching the conference, there was another crisis due to the U.S. government shut-down. In spite of these critical situations that might have jeopardized the success of the conference, we have hosted a surprisingly successful conference both in quality and in quantity.

During the meeting, seven Short Courses attracted many students and eight specialized workshops, which ranged from *New Technologies in Hadron Therapy* to *PET-MR and SPECT-MR*, also had very large attendance. The total attendance was one of the largest on record, second only to the 2008 conference – and this being the first time in the Asia-Oceania region. The continuing education program was further complemented by scheduling five refresher courses and, even with an early 7:00 am start, many experienced an attendance similar to that of the main scientific sessions. At this meeting, the venue for the activities was the spacious and modern COEX Convention Center that was used for posters, various oral sessions, exhibitions, and most luncheons and receptions. This modern facility



Front of Main Session Room at COEX

was well suited for the conference size and the poster sessions and exhibition were put together in a spacious area allowing for comfortable interactions among the presenters, exhibitors, and the attendees. As a strong IT country, one of the biggest efforts was to ensure reliable and fast Wi-Fi internet service and it was very satisfying not to experience the typical issues of previous conferences. All of this contributed to a very successful and enjoyable week. Attendees were treated to the finest in Korean food and beverages supplied mainly by the Walkerhill Hotel in Seoul and local producers. Both local specialties and international favorites were available during the many breakfasts, lunches, receptions, and dinners served during the conference.

The success of the meeting was made possible by the incredible work of the Organizing Committee members who contributed a massive effort both before and during the meeting to ensure that everything worked as planned. The Program Chairs, topic conveners and session chairs assembled a strong program with the help of the many reviewers. With over 1800 papers to be reviewed, this was indeed a major undertaking, especially given the time constraints. The NSS, MIC, and RTSD Program Chairs tried new ideas for the organization of the sessions. Once again, the NSS and RTSD Program Chairs worked together to eliminate as many overlapping and conflicting papers as possible. I am certain that the attendees appreciated their work to try and minimize session hopping. It is also a pleasure to report that with the financial sponsors of the meeting,

we were able to award 136 trainee grants. These grants are of great importance as they allow young researchers to attend the meeting and meet more senior scientists to exchange ideas and results. This year, 67 companies participated in the industrial exhibition that was collocated with poster sessions.

It is the attendees of the Conference that deserve the greatest thanks, as it is their work that makes all of this possible. As you go through the CD of the Conference Record, I hope you will be able to review the papers and presentations that you enjoyed, as well as read any you may have missed during the conference. The Conference and the Conference Record are truly your work and it is only through your participation that we have been able to make this meeting the premier meeting in the world for our fields.

Participants and their companions were able to enjoy fully the attractive region of Seoul, including its historical and cultural downtown, its more modern areas and the beautiful surrounding environment. The companion program offered nine tours that made the visit to Seoul even more enjoyable.

NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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NSS/MIC/RTSD Organizing Committee and Invited Delegates

President's Report

As we begin the year 2014, I would like to welcome all our new IEEE and NPSS members and hope that you have already begun to feel part of the wonderful organization that you have joined.

Our Society's membership grew last year thanks in a large part to our excellent volunteer recruiters led by our Membership Chair, Sal Portillo, and our new Deputy Membership Chair for Europe, Jean-Luc Leray. I am also grateful to Vern Price for his great behind-the-scenes efforts to keep track of all of the new membership forms and paperwork. I would also like to thank all of the volunteers who serve at our NPSS membership booths at our conferences.

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Elections for 2014 were held in the fall resulting in the selection of our new IEEE Vice-President-Elect for Technical Activities, Vincenzo (Vin) Piuri, and our new Division IV Director-elect, NPSS's own William Moses. Our NPSS Technical Communities also elected new AdCom representatives for four-year terms beginning January 1, 2014. I would like to welcome to AdCom Stefan Ritt for Computer Applications in Nuclear and Plasma Science (CANPS), Steven Gold for Plasma Science and Applications (PSAC), Weihua Jiang for Pulsed Power Science and Technology (PPST), David Hiemstra for Radiation Effects (RE), and Richard Lanza for Radiation Instrumentation (RI). I wish to extend my hearty thanks to our outgoing elected members, Christian Bohm for CANPS, Gerald Cooperstein for PPST, Paul Dodd for RE, and Glenn Knoll for RI. All have been actively engaged in AdCom meetings and served their technical communities well. It has been a pleasure to work with each of you. Also, many thanks to Albe Larsen, our NPSS Secretary, for volunteering to run the nomination process.

The AdCom also welcomes two new Technical Committee Chairs whose terms started on January 1, 2014. Dimitris Visvikis is now heading our Nuclear Medical and Imaging Sciences Council (NMISC), and Martin Purschke has taken over as Chair of Computer Applications in Nuclear and Plasma Sciences (CANPS). I would also like to thank Suleman Surti/NMISC and Stephan Ritt/CANPS for doing an outstanding job of representing and leading their technical communities during their terms as Chair.

Finally, I would like to recognize Ronald Jaszczak for his many years of service as a NPSS *Transactions on Medical Imaging* (TMI) Steering Committee Liaison Representative. Ron has been in the forefront of working toward new IEEE publication venues for medical imaging papers. Although Ron has resigned as our TMI liaison, I am happy to say that he will continue to support the development of a journal proposal and to represent the Nuclear Medical and Imaging Sciences Committee as their 2016 elected representative. Thank you, Ron, for your past and future contributions to the IEEE and NPSS.

As I look back on my first year as President of NPSS, I am proud to note key accomplishments of our Society, including an increase in our world-wide membership, the formation of new Chapters, successful conferences, an extremely successful publications review (thank you, Paul Dressendorfer and Steven Gitomer!), and progress made to establish a new journal in the area of medical imaging. We also established two new awards: the Charles K. Birdsall Award for Contributions to Computational Nuclear and Plasma Sciences and the IEEE Ronald J. Jaszczak Graduate Award. The Birdsall Award recognizes outstanding contributions in computational nuclear and plasma science, with preference given to areas within the broadest scope of plasma physics encompassing the interaction of charged particles and electromagnetic fields. The Jaszczak Award recognizes and enables

an outstanding graduate student enrolled in an accredited Ph.D. curriculum, Post-doctoral Fellow or Ph.D. level Research Associate in the field of nuclear medical and imaging sciences. In addition to the two new NPSS awards, the NPSS Jordanov Travel Grant, which supports graduate students and young scientists to attend the IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC), received additional funds to the IEEE Foundation from its donor, Valentin Jordanov. This allowed increasing the amount of the individual travel grants. Thank you Ginger Birdsall, Ronald Jaszczak, and Valentin Jordanov for your generous contributions, which have enriched our NPSS awards portfolio. I wish to also thank Craig Woody, John Verboncoeur, and Merry Keyser for working with our donors and the IEEE to finalize the awards agreements.

This past November the NPSS AdCom started

This year we will also be conducting our NPSS membership survey. We have begun preparation for the survey, which will include questions based on the results of our Society Review.

preparing for our once every five years IEEE Society review, which will be held in mid-February. This requires that the AdCom prepare an extensive report of Society status and activities including the purpose of the Society and how we incorporate advances in technology; our strategy and operations; a report on conferences, publications, and education; status of membership; financial status; Society governance; and Society successes and best practices. I am wrapping up the final report as I write this and look forward to meeting with the review committee in February. The next NPSS Newsletter will provide an overview on how our Society was rated in

NOT ALWAYS RIGHT, TOO!

Long experience has taught me that to be criticized is not always to be wrong.

Anthony Eden



Janet Barth
President, IEEE NPSS

the review. I extend my thanks to the AdCom members who provided their support to prepare the document. Your insights were invaluable.

This year we will also be conducting our NPSS membership survey. We have begun preparation for the survey, which will include questions based on the results of our Society Review. I encourage all of you to respond to the survey, so we can use your feedback to best serve our membership. NPSS is one of the smaller Societies in the IEEE, however, we are viewed as one of the most successful. Your input on how we can continue to make NPSS successful is critical.

Finally, I would like to recognize Hal Flescher, our NPSS Finance Chair, former NPSS President, former TAB president, and current member of the IEEE Finance Committee, for being elected to the newly established IEEE Technical Activities Board (TAB) Hall of Honor. The TAB Hall of Honor was established to honor those persons, living or deceased, who have made one or more major contribution(s) to IEEE Technical Activities. Contributions include the creation, development, or advancement of the technical objectives of the IEEE. Hal was recognized for enhancing the ability of TAB/IEEE to support technical activities, particularly through better financial management. Through his work with the IEEE, Hal has also helped the NPSS to maintain continuity of operations and to understand the business model for the IEEE and the vision and mission of Technical Activities. Please join me in congratulating Hal for receiving this prestigious award.

Janet Barth, NPSS President, can be reached at the Electrical Engineering Division, NASA Goddard Space Flight Center, Greenbelt, MD, 20771, Phone: +1 301-286-5118 or at jbarth@ieee.org.

Secretary's Report

The IEEE NPSS AdCom met in Seoul, South Korea at the Coex Convention Center on 2nd November 2013, following the 2013 NSS/MIC/RTSD meeting. We were delighted to have IEEE Executive Director Jim Prendergast, and Division IV Director, Jozef Modelski, as our guests.

Our treasurer, Ron Keyser, noted that income was down significantly and that the society earnings were running negative to plan. Conference incomes are below plan. Both our fully sponsored journals, *Transactions on Plasma Sciences* and *Transactions on Nuclear Sciences* are running over their page forecast, whereas *Transactions on Medical Imaging* is running at forecast. While extra pages mean that we will not earn a bonus on these two journals, it is considered more important to get papers out in a timely fashion. While conference closings have improved overall, there is still one 2011 conference in audit and a 2012 conference with open books. All 2013 conferences were, in November, still open. President Barth noted that the fall TAB series was later in November, with a Division IV meeting scheduled on Nov. 21st at which Janet will discuss the Particle Accelerator community's Teachers' days. TAB activities will focus on further discussion of technically cosponsored conferences, TAB branding and the Educational Activities Board (EAB) survey.

One goal of TAB branding is to make TAB activities more visible through use of society newsletters and magazines. The EAB survey requested information on our plenary lectures, workshops, tutorials, distinguished lecturers program and so on.

An IEEE Forum for Leading Researchers was held in October in Austin, TX. This was the first of meetings proposed so that IEEE can gather first-hand information on the future of research processes and tools to bring back to societies and councils to help improve their conference and journal and other offerings, and for researchers to bring improvements to their groups. Other meetings were held in 2013 in Narita, Japan, and Amsterdam, the Netherlands.

A new guideline for handling inappropriate conduct has been drafted and released for comment. Votes were to be taken at the November TAB series, so expect an update in the June newsletter.

Jim Prendergast gave us an overview of IEEE's current status after thanking Peter Clout for inviting him to join us. Overall IEEE is in good fiscal shape, and membership is strong. Non-North American membership now exceeds that of Regions 1-7 and is growing rapidly. There are now IEEE offices for China, India, Japan and a fourth for the rest of Asia/Pacific Rim. It is expected that China will ultimately have the largest number of IEEE members.

The Singapore office helped with running as an IEEE backup site during Hurricane Sandy and its aftermath which put the Piscataway office out of commission for almost two weeks. The Bangalore office now has 20 employees and it is anticipated that that number may double by the end of 2014. It is in a world trade center and attached to a Sheraton hotel where a number of IEEE conferences have been held. There are many new hotels opening in the area. Information Technology (IT) operations will be moved here because it is much less expensive



Albe Larsen
IEEE NPSS Secretary
and Newsletter Editor

and operations are 24 hour. The Chinese office is in the Haidian district of Beijing. Ning Hua is director. They have helped with the PES SmartGrid meetings, among many others, and are the focus of membership drives in China as well as work on integrating the Chinese community into the international standards structures to which there had been considerable opposition. Now there has been a full turn around. There is also a Chinese edition of *Spectrum* published through them. They have also aided in the acquisition of a Tsinghua University science and technology journal. China is now number 5 in membership but within 10 years

they may well be first. It is expected that there will be more Chinese publications listed in Xplore as well as more leadership from the Chinese technical community.

HQ is also working on greater collaboration among TAB, EAB and MGA, on new products, on Cloud and Inter-Cloud standards and interoperability; avoidance of internet fragmentation into local internets, with the development of Std. 2302. The Internet of Things is a new portal for communications.

In education they are working with Stanford University, MIT, Carnegie-Mellon on Massively Open Online Courses (MOOCs) for which Google is providing a portal. Copyright issues are still being resolved.

IEEE's goal is to be, by 2016, the global provider of choice for publications, conferences and so on in our field.

Jozef Modelski, the TAB Division IV Director, explained the Division structure. TAB has ten divisions which comprise one or more societies each. TAB determines the composition of each Division. Our Division has seven societies and one council. While total IEEE membership is growing, society membership is not.

The question has again arisen of what Divisions themselves can do. In some instances, for example, AdComs might try to meet at the same time in the same location to perhaps get some financial breaks based on scale.

Jozef also noted a number of trends to watch including nontechnical trends such as demographic shifts and their influence on markets; global competitiveness; technology trends, and so on.

As IEEE is becoming more global, better global representation is also needed at all levels, and educational activities need to be enhanced, especially in developing areas such as Africa and South America.

TECHNICAL COMMITTEE REPORTS

Computer Applications in Nuclear and Plasma Sciences:

Plans for the Nara, Japan conference are well in place. They will use the IEEE web-based budgeting tool. A Summer School following the conference, will get support from the Distinguished Lecturers program.

Martin Purschke will be the new CANPS chair, and Stefan Ritt is now the elected member for CANPS since Christian Bohm's term ended on Dec. 31st, 2013.

Fusion Technology:

The June SOFE conference was a great success, with higher attendance than in many years. A special issue of *Transactions on Plasma Sciences* (TPS), with Iiv Katz of PPPL as guest editor, will feature papers from the conference.

The 26th SOFE will be collocated with the 2015 Pulsed Power conference in Austin, Texas, with Jean Paul Allain as the SOFE chair and Mark Crawford as the Pulsed Power chair. There will be a joint budget and a joint local arrangements committee, but separate banquets and separate special issues of TPS. The conferences will be in the downtown Hilton. Jane Lehr will serve as treasurer for the joint committee and Mark Tillack will serve as SOFE program chair. One goal is to maintain the high attendance seen in 2013. China now has a large and growing fusion community and may be the site for the first non-North American SOFE. Another goal is to continue to increase student attendance and to find increased support for students. Another goal is to leverage the Distinguished Lecturers program. A question remains of how to tap into communities in South America, especially in Columbia and Brazil.

Nuclear Medical And Imaging Sciences and Radiation Instrumentation:

Five new members were elected to each of the NMISC and RI steering committees for three-year terms beginning in January 2014. RISC and NMISC have revised the activities of their Joint Oversight Committee. See more detail under the Technical Committee reports, as well as the revised C&BL changes.

NMISC requested a vote to technically cosponsor the 2014 PET-MR/SPECT conference to be held in Greece. See AdCom actions

Both committees reported on the success of the 2013 Seoul NSS/MIC/RTSD conference, the first large NPSS conference to be held in Region 10. Data are in the chairman, Hee-Joung Kim's report and in each TC report.

NMISC and RISC also have formed a joint committee to develop paper review and evaluation standards. They are also working with the RTSD community to eliminate duplicate papers and to combine papers with significant content overlap.

RISC technically cosponsored a joint IEEE/APS workshop organized through the DNDO. The joint report has been approved by APS and IEEE approval will be forthcoming shortly. The report will appear in Xplore.

The 2014 NSS/MIC/RTSD conference will be fully paperless with programs loaded to smart devices and with ample availability of charging stations for these devices. The conference will be held in Seattle with Tony Lavietes as general chair.

Suleman Surti, chair of NMISC, has been, as of Jan. 1st, 2014, replaced by Dimitris Visvikis of the University of Brest, Fr. Suleman will continue his AdCom connection as one of our two TMI liaisons. Randy Brill is the other liaison.

Particle Accelerator Science and Technology:

The PAST TC will remain with no changes until fall 2014 when they expect to become an elected TC. The 2013 North-American PAC was held in Pasadena, CA in early October. Attendance was down from the last NA-PAC held in New York City. The next IPAC will be in Richmond, VA in 2015. This would be the 50th anniversary of the founding of the PAC conference series. Brazil is submitting a proposal to host IPAC 2021.

Plasma Science and Applications:

The PSAC elected six new members to the executive committee. One member resigned so a special election was held to select a replacement. Their Constitution and Bylaws will be reviewed in 2014 with Don Schiffer chairing the review committee. The 2013 joint conference with PPPS was successful, albeit with reduced attendance and a program in constant flux that needed continual real-time care by the program chairmen.

The 2014 conference is joint with the BEAMS conference (see Dec. 2013 newsletter cover story), the 2015 conference will be in Antalya, Turkey, and the 2016 conference will return to Banff, Alta, Canada.

Sequestration has caused difficulties for this and each of our conferences this year. Fortunately alert conference committees have stemmed serious disasters.

Pulsed Power Science and Technology:

The committee now has twenty voting members and the position of vice chair has been created and is held by Andreas Neuber of Texas Tech. They are transitioning to an elected TC and have a first draft of their Constitution and Bylaws prepared. The transition is planned over a three-year period.

The 2017 conference will be held in the UK. Site selection for 2019 has begun.

Radiation Effects:

2013 was the 50th anniversary of NSREC so many special events were held and papers given. See elsewhere in this and the December 2013 Newsletter for detail. The 2014 conference will be in Paris with Robert Ecoffet as chair. There will be no RADECS conference so NSREC will be the sole international radiation effects conference. In 2015 NSREC returns to the U.S., to Boston, MA under Mike Xapsos as general chair. Conference venues are set through 2017.

FUNCTIONAL COMMITTEE REPORTS

Conferences:

Plagiarism checking will be mandated for all conference abstracts and papers. CrossCheck is the tool supported by IEEE and it is available with free support.

Caroline Johnson of MCE is our NPSS point of contact on conference issues: cjohnson@ieee.org. A teleconference is proposed for NPSS conference organizers to share information and best practices.

IEEE is working to aggregate venue selection to increase buying power. InterContinental and Hyatt hotels are now part of 'venue select.' Other chains are being added.

The MOU for technically cosponsored conferences is being simplified. The Conference Committee also looking at international conference questions related to finance. Hal Flescher and Ron Keyser of NPSS are involved.

Charges for technically cosponsored conferences are being finalized. At present NPSS spends about \$50k a year in overhead supporting these. It may be that costs will be split equally between the IEEE entity and the external organizing group.

Awards:

NPSS has had two new awards approved for 2014, the Birdsall Award and the Jaszczak Award. See the President's report.

Chapters:

There are now 21 NPSS chapters including one student branch in Egypt (see Dec. 2013 newsletter). There is a new chapter in Algeria.

Social media initiatives are needed, especially in relation to student branches. If anyone reads this and is interested in being part of a committee looking at NPSS use of social media, contact John Verboncoeur, NPSS Vice President/President-elect at johnv@msu.edu.

Distinguished Lecturers:

As of November 14th Distinguished Lecturers had 14 programs, including one presented by Ralph James in Seoul in July. John Sethian used lab downtime to give some lectures. The Alexandria student branch has requested that DLs do webinars

Fellows:

Fellows nominations for the class of 2015 were due March 1st. Of nine nominations for the Class of 2014, six members were elevated to Fellow. See Awards section. Remember that if you are not a senior member you are not eligible to become a Fellow!

Finance:

The Finance Committee has initiated three-time yearly face-to-face meetings. A major task is developing worthy new initiatives on which to use some of our society reserves. One past initiative valuable to NPSS was developing new conference software that was comprehensive in handling abstract submittal, paper submittal, program and brochure production, registration and so on. Software to facilitate real-time program management during a conference is proving to be a big necessity. Budgeting tools also need updating. Other initiatives

might include greater student support opportunities, use of Smart technology, short course, etc.

External initiatives such as support for the Community Solutions Initiative work in Haiti and Africa are evaluated on a one by one basis.

Publications:

There was a five-year society periodicals review in June of both the *Transactions on Plasma Science* and the *Transactions on Nuclear Science*. The same issues continue to reappear, especially term limits for the Editors-in-Chief and other editors, Administrative and editorial paper rejection was also discussed. Both TNS and TPS use CrossCheck routinely.

Dan Fleetwood has replaced Jim Schwank as the Radiation Effects senior editor of TNS. Time to publication, first review, etc. are all well within IEEE's recommended guidelines with only two delays in the last five years. The TPS impact factor has dropped but no cause has been identified. TPS still focuses on a great number of special issues.

Discussion continues about a TNS-B focused on medical imaging papers that would then be indexed in Medline and other medical journal indices. This is important for the NMISC community and has been under discussion for quite a few years.

Communications:

This was the year of new logos and of a new look for our literature, including this newsletter. Communications and Membership worked together to host membership booths at ten conferences and two chapter meetings. The web site is being redesigned; it will work on all platforms. It will be easier to update. Searching should be easier, and the overall appearance and content for each TC should be more consistent.

It also allows social media links but again, someone needs to step up to volunteer to manage social media content. A preview is expected in March.

Graduates of the Last Decade (GOLD):

GOLD will become IEEE Young Professionals in 2014. NPSS registers 824 of our ~3000 members as GOLD members. Of these only about 15% are women, which is disappointing considering that in some other areas the number of women and men is almost equal. GOLD events are being held at an increasing number of NPSS conferences. This could perhaps be tied to the IEEE Mentoring Program: http://www.ieee.org/membership_services/membership/mentoring/index.html.

Transnational Committee:

The committee has been reorganized to a membership of 12. In addition there are now corresponding members. They are involved with the planning of the Nara Summer School and are also planning a meeting prior to the 2014 Paris AdCom meeting. They are working toward more visibility in China.

LIAISON REPORTS

Community Solutions Initiative, SIGHT and Social Implications of Technology:

Two CSI workshops were held in 2014, one in July in Vancouver in conjunction with the PES General Meeting and the other in San Jose, CA prior to the 2014 IEEE Global Humanitarian Technology Conference. CSI has become a member of the Posner Center for International Development housed in Denver, CO which opened officially on Nov. 6th, 2013 and which houses about 40 NGOs. The CSI goal is ten new start-ups a year. They are working with the IEEE Foundation on fundraising and developing standard models of products as well as standard operating procedures for business models.

ICALEPCS:

The ICALEPCS meeting in San Francisco had very high attendance. There are concerns that there is

little connection with our Real Time conference and also little work presented on automated controls for large systems. It is unlikely that NPSS will send someone to host a membership booth at their next meeting in Australia.

Women in Engineering:

Several of our conferences held very successful WIE events, and more conferences will add these. A continuing problem is hosting WIE and GOLD events at the same time because there is often conflict.

Transactions on Medical Imaging:

The journal is highly successful with an impact factor of four, very rapid paper turnaround, and paper

acceptance rate of about 20%. Our liaisons and officers continue to work with the other societies that also sponsor TMI to get approval for a TNS-B that would contain our MIC papers. It seems the only place of possible conflict is in image reconstruction papers, most of which are submitted to TMI anyhow.

BUSINESS CONDUCTED BY ADCOM

■ Motion to approve revisions to the Bylaws of the NMISC and RI Constitution and Bylaws Joint Oversight Committee was approved. See TECHNICAL COMMITTEES reports under Radiation Instrumentation for revised text and NPSS web sight for full document.

■ Motion to support PAST 50th anniversary celebration up to \$50k was approved

■ Motion to support the IEEE Community Solutions Initiative to the level of \$100,000 for 2014 was approved.

■ Motion to Join Applied Superconductivity Council was defeated unanimously.

AdCom will hold its first 2014 meeting in Santa Fe, NM on Saturday, March 1st. February 28th will be our annual retreat at the same venue.

Albe Larsen, IEEE NPSS Secretary and Newsletter Editor, can be reached at SLAC National Accelerator Laboratory, MS-64, 2575 Sand Hill Road, Menlo Park, CA 94015; 650-926-2748; E-mail: amlarsen@slac.stanford.edu.

CREDIBILITY GAP

Everyone realizes that one can believe little of what people say about each other. But it is not so widely recognized that even less can one trust what people say about themselves.

Rebecca West

New AdCom Members

PLASMA SCIENCE AND APPLICATIONS



Brendan Godfrey

Brendan Godfrey has been a Visiting Senior Research Scientist at the University of Maryland since March 2010, and through the university served for two years as a half-time consultant to the Deputy Assistant Secretary of Defense for Research. Recently, he became an Affiliate of Lawrence Berkeley National Laboratory. He retired from the Air Force early in 2010, after 21 years as an executive manager of its research programs. His assignments included Director of the Air Force Office of Scientific Research in Arlington, Virginia; Deputy Director of the 311th Human Systems Wing at Brooks City-Base, Texas; Director of Plans and Program at the Air Force Research Laboratory at Wright-Patterson AFB, Ohio; Director of the Armstrong Laboratory at Brooks AFB, Texas; Director of Advanced Weapons and Survivability at Phillips Laboratory; and Chief Scientist of the Air Force Weapons Laboratory, both at Kirtland AFB, New Mexico. Before that, he was Vice President and Regional Manager of Mission Research Corporation, Intense Particle Beam Group Leader at Los Alamos National Laboratory, and a plasma scientist at Kirtland AFB. His personal research centers on computational plasma physics, intense microwave sources, and particle beam acceleration and propagation. He is a Fellow of the Institute of Electrical and Electronics Engineers and of the American Physical Society. He also is a three-time recipient of the Meritorious Executive Presidential Rank Award, as well as other federal recognitions. He holds a Ph.D. from Princeton University and a B.S. from the University of Minnesota.

Brendan has been a member of the IEEE since 1976, and has served on the PSAC ExCom almost continuously since 1994, including twice as Vice-Chairperson, once as Chairperson, as now as Most Recent Past Chairperson. As Chairperson, he was an ex officio member of the NPSS AdCom in 2011-2012. He maintains the comprehensive NPSS Directory of Plasma Conferences and the PSAC blog. Since 2011 he has been a member of the IEEE-USA Research and Development Policy Committee, recently having been elected Vice-Chair. Over the years he has helped to organize several plasma conferences and has served on a number of state, local, university, and National Research Council advisory committees.

Brendan Godfrey can be reached by phone at 281-778-1517 (home) and 832-808-0882 (cell) or by E-mail at brendan.godfrey@ieee.org.

PLASMA SCIENCE AND APPLICATIONS



Steven H. Gold

Steven H. Gold (M'86, SM'88, F'96) is the Senior Scientist for Radiation Generation Physics in the Beam Physics Branch of the Naval Research Laboratory, where he has worked since receiving his Ph.D. in physics from the University of Maryland in 1978. He currently directs a program to study accelerator-related microwave technologies, including dielectric-loaded accelerating structures, and serves on the NRL Invention Evaluation Board. His research interests also include high-power microwave generation, microwave applications to industrial processes, and free-electron lasers. He has published 68 journal articles and 115 proceedings papers in these and other areas, and holds six U.S. Patents and two Statutory Invention Registrations. He has been involved with the activities of the Executive Committee of the NPSS Plasma Science and Applications Committee since 1990, including three 3-year terms as an elected member, two years as Vice Chair, and the past fourteen years as the Secretary of PSAC. He was an Associate Editor of the *IEEE Transactions on Plasma Science* for twenty years (1988–2007), with responsibility for its biennial special issues on High Power Microwave Generation. He served on the ICOPS program committee on a number of occasions, was Technical Program Chair of ICOPS 2011 in Chicago, and is Treasurer of ICOPS/BEAMS 2014 in Washington, DC. He has served two previous terms on the NPSS AdCom, during which he worked to strengthen the Society and its journals and conferences. He managed the NPSS Distinguished Lecturers Program for five years, and currently chairs the AdCom Chapters and Local Activities Committee. He also chaired a committee that restructured the editorial board of the *Transactions on Nuclear Science* (2004), and served on committees that restructured the *Transactions on Plasma Science* (2005), revised the NPSS Constitution and Bylaws (2005, 2010), and created the Marie Skłodowska-Curie Award (2008). He is a Fellow of the IEEE (1996) and the American Physical Society (1998), and served four years on the IEEE Fellow Committee (2008–2011). In recognition of his activities, he received the 2008 NPSS Richard F. Shea Distinguished Member Award "for outstanding contributions to the IEEE Nuclear and Plasma Sciences Society and its Plasma Science and Applications Technical Committee."

Steve Gold can be reached by E-mail at steven.gold@nrl.navy.mil.

RADIATION EFFECTS



David M. Hiemstra

David M. Hiemstra received his B. Eng. & Mgt. (1984) and M. Eng. (1993) degrees in Electrical and Biomedical Engineering, respectively from McMaster University. He is a Senior Member of the IEEE. David joined MacDonald, Dettwiler & Associates (MDA), formally Spar Aerospace, in 1984, where he is a Senior Staff Engineer. He is involved in radiation effects and embedded avionics hardening for space, nuclear, and military applications, systems engineering, advanced infrared and visible focal plane array technology, analog circuit design, and electromagnetic compatibility. His current area of research is Single Event Effects in commercial off-the-shelf, system on a chip, microelectronics.

David is currently the technical lead for EXOMARS Actuator Drive Electronics and OSIRIS-REx Laser Altimeter (OLA) embedded avionics. He was technical lead on Earth Video Camera, VIPER, MSL Alpha Particle X-Ray Spectrometer, HTV Berthing Cueing System, and SRMS Display and Control Panel. He has worked on a number of satellite programs including: RADARSAT Constellation, Sapphire, Cassiope, and RapidEye. On the ISS Mobile Servicing System he worked in the area of electromagnetic compatibility. He designed data acquisition electronics for the ITER fusion reactor. Early in his career he was a low noise analog circuit designer on the shipboard infrared surveillance system programs: SIRIUS and AN/SAR-8.

David has taught space radiation effects on embedded avionics at York University and for several aerospace firms. He coordinated radiation effects test programs at the University of Toronto Institute for Aerospace Studies, University of Waterloo, and York University. He is currently collaborating with the University of Saskatchewan on the study of single-event effects in programmable devices for space instrumentation.

David has been active with NSREC, serving as Member-at-Large Radiation Effects Steering Group (2000-2003), Awards Committee (2002, 2005), Devices and Integrated Circuits Session Chairman (2000), Radiation Effects Data Workshop Chairman (2006), Local Arrangements Chairman (2009) and as a reviewer on an ongoing basis. He has presented papers at every Nuclear and Space Radiation Effects Conference (NSREC) since 1995. David prepares a Guide to the Radiation Effects Data Workshop each year. The guide is available on the NSREC website. He has authored more than 35 papers on radiation effects.

David Hiemstra can be reached by E-mail at dave.hiemstra@mdacorporation.com.

PULSED POWER SCIENCE AND TECHNOLOGY



Weihua Jiang

Weihua Jiang received his undergraduate and Master's degrees in China from the National University of Defense Technology in 1982 and from the Institute of Atomic Energy in 1985, respectively. He moved to Japan in 1987 and received his Ph.D. in Energy and Environment Engineering from Nagaoka University of Technology in 1991. Since then, he has been teaching in the Department of Electrical Engineering while conducting research at the Extreme Energy-Density Research Institute at Nagaoka University of Technology. During this time he also spent one year at Texas Tech University, Lubbock TX, as a Visiting Associate Professor and two years at Tsinghua University, Beijing, China, as a Professor.

Dr. Jiang's research interests are in high-power particle beams, high-power microwaves, and pulsed-power technologies. He was educated and trained during the time when light-ion beams were developed as potential inertial confinement fusion drivers. He later focused on high-power microwave sources including virtual cathode oscillators, relativistic magnetrons, and large-orbit gyrotrons. Since the early 2000s he has mainly concentrated on the development and application of compact, repetitive pulsed-power generators. Together with his collaborators, Dr. Jiang has developed different switching technologies and circuit configurations for pulsed-power generation. In addition, he has carried out a series of experimental demonstrations for applications of pulsed-power technology to environmental protection and accelerator development. He has authored/coauthored more than 200 journal articles and has presented more than 60 papers at various international conferences as plenary, invited, or oral talks. He received the Pulsed Power Fundamental Research Award from the International Society on Pulsed Power Applications e.V. in 2012.

Dr. Jiang is a member of IEEE NPSS Standing Technical Committee for Pulsed Power Science and Technology. He has served the *IEEE Transactions on Plasma Science* as a Guest Editor several times before working as a Senior Editor started in 2012.

Weihua Jiang can be reached via E-mail at jiang@nagaokaut.ac.jp

UNLESS THEY ARE VERY BAD

Some books are undeservedly forgotten; none are undeservedly remembered.

W. H. Auden

RADIATION INSTRUMENTATION



Richard Lanza

Richard Lanza is a Senior Research Scientist in the MIT Department of Nuclear Science and Engineering and a Consultant in Radiology at Harvard Medical School. His primary interests are in the application of nuclear techniques and development of instrumentation to problems in materials science, medicine and national security. Current research is in the development of compact superconducting cyclotrons for medical and security applications, long-range passive detection of radiation sources using combined coded aperture and Compton imaging, phase contrast X-ray imaging for high contrast medical imaging, active interrogation methods for detection of nuclear materials and nuclear proliferation policy and technology. He is now developing an NNSA-funded curriculum

for Nuclear Security as part of a three-university educational consortium. He has also worked in instrumentation for high energy physics, imaging for nuclear medicine and small animal imaging, humanitarian demining and X-ray CT imaging. He has served on review panels for the U.S. Department of Energy, the Transportation Security Agency, the NIH and the National Academy of Sciences and has been an Expert Advisor to the IAEA. IEEE activities include General Chair NSS/MIC (2009), Program Chair NSS (2005), membership in RISC and RISC representative to AdCom.

Professional interests include: High-speed electronics, nuclear instrumentation, particle and radiation detectors, application of physical instrumentation to medical problems, medical imaging, computerized tomography (CAT), image reconstruction, application of imaging techniques to nondestructive testing and evaluation, neutron radiography, neutron tomography, applications of nuclear and X-ray techniques to aviation security, land-mine detection and characterization technologies and strategies, accelerator based isotope production, applications of tomography to metal processing and production, neutron phase-contrast imaging, remote sensing and standoff detection for nuclear materials, nuclear forensics, novel radiation detectors, development of educational curricula for nuclear security, proliferation and safeguards, and energy systems.

He holds an A.B. degree from Princeton and M.S. and Ph.D. degrees from the University of Pennsylvania, all in Physics.

Dick Lanza can be reached by E-mail at Lanza@mit.edu.

COMPUTER APPLICATIONS IN
NUCLEAR AND PLASMA
SCIENCES

Stefan Ritt

Stefan Ritt (M'07, SM'11) got his Ph.D. in physics from the University of Karlsruhe, Germany, in 1993. He is currently head of the muon physics group at PSI, Switzerland, where he is working for the lab's particle physics

program involving experiments with muons and pions. Among other involvements he is technical coordinator of the MEG experiment, where he is responsible for the readout electronics, the DAQ hardware and software and the slow control system. He is primary author of the MIDAS DAQ system and the ELOG electronic logbook software, which are used today in many experiments worldwide.

He designed and owns a patent for the DRS series of chips, which allow ultra-fast waveform digitizing in the GHz range. These chips and associated electronics boards are now used in more than 50 locations worldwide, having a major impact in the community and enabling many groups to perform better experiments compared to traditional electronics.

He has been involved in the organization of the IEEE NPSS Real Time conference since 2003, where he has served as short-course instructor, program co-chair and chair of the CANPS technical committee. He served as Associate Editor of the *Transactions on Nuclear Science* (2005-2009) and was member of the NPSS awards committee (2010). He is topic convener of the NPSS Nuclear Science Symposium (2013) and is an NPSS Distinguished Lecturer.

Stefan Ritt can be reached by E-mail at Stefan.ritt@psi.ch.

New Technical Committee Chairs

COMPUTER APPLICATIONS IN
NUCLEAR and PLASMA SCIENCESMartin Purschke,
CANPS Chair

Martin Purschke is a physicist working for the PHENIX experiment, one of the two large experiments at Brookhaven National Laboratory's Relativistic Heavy Ion Collider on Long Island, NY. He received his master's degree and Ph.D. from the University of Muenster in Germany in 1990. Before joining BNL and the PHENIX collaboration in 1996, he spent more than 10 years at CERN with the SPS Heavy-Ion program as a member of the WA80, WA93, and WA98 collaborations.

He is currently the data acquisition coordinator of the PHENIX experiment. He is a member

of the CERN RD51 collaboration, and has provided the collaboration with a data acquisition system for the standard hardware designed by them. For a fraction of his time, Martin works with the Medical Imaging projects at BNL, such as the RatCAP, a PET-Imaging detector that allows imaging the brain of an awake rat.

Martin is a senior member of the IEEE, is a frequent reviewer for TNS, and is a regular at the NSS-MIC and IEEE Real-Time conferences. As of 2014, he is the Chair of the Computer Applications in Nuclear and Plasma Sciences technical committee (CANPS), a member of the Radiation Instrumentation Steering Committee (RISC), and a NPSS distinguished lecturer.

Martin Purschke can be reached by E-mail at purschke@bnl.gov.

FAUTE DE MIEUX

Prejudices are what fools use for reason.

Voltaire

NUCLEAR MEDICAL AND
IMAGING SCIENCESDimitris Visvikis
NMISC Chair

Dimitris Visvikis is a director of research with the National Institute of Health and Medical Research (INSERM) in France and a co-director of the Medical Image Processing Lab in Brest (LaTIM, UMR1101), where he has been for over ten years leading a group on quantitative multimodality imaging for both diagnosis and therapy applications.

He obtained his Ph.D. from the University of London in 1996 working in PET detector development within the Joint Department of Physics in the Royal Marsden Hospital and the Institute of

Cancer Research. After working as a Senior Research Fellow in the Wolfson Brain Imaging Centre of the University of Cambridge he joined the Institute of Nuclear Medicine in University College London where he introduced and worked for five years with one of the first clinical PET/CT systems in the world. He has spent the majority of his scientific activity in the field of PET imaging, including developments in both hardware and software domains.

His current research interests focus on improvement in PET/CT image quantitation for specific oncology applications, such as response to therapy and radiotherapy treatment planning, through the development of methodologies for detection and correction of respiratory motion, 4D PET image reconstruction, partial volume correction, tumour volume segmentation and tumour activity distribution characterisation algorithms, as well as the development and validation of Monte Carlo simulations for emission tomography and radiotherapy treatment dosimetry applications. He is a member of numerous professional societies such as IPFM (Fellow, Vice-President International), IEEE (Senior Member, NPSS NMISC chair), AAPM, SNM (CalC board of directors 2007-2012), EANM.

Dimitris Visvikis can be reached by E-mail at Dimitris@univ-brest.fr.

Technical Committees

COMPUTER APPLICATIONS IN
NUCLEAR and PLASMA
SCIENCESMartin Purschke,
CANPS Chair

The preparations for the next Real Time Conference are well under way. The conference will take place Nara, Japan, from May 26th to May 30th 2014, and is organized by the University of Osaka,

the RIKEN Research Institute and the KEK High Energy Accelerator Research Organization under the chairmanship of Masaharu Nomachi. Abstract submission closed on February 17th, and the early registration deadline is April 23rd.

Nara was the capital of Japan from 710 to 784, and has many historical shrines and temples containing national treasures. Famous tourist spots such as the Kofukuji Temple, the Todaiji Temple, and the Kasuga Shrine are within walking distance from the conference venue, the Nara Prefectural New Public Hall. The center has multiple conference rooms and a Japanese-style garden, which will make this conference a unique experience.

We are in the process of finalizing the program for a summer school for real-time applications in particle and nuclear physics. This is the first time that we will hold a summer school in conjunction with the conference. The school will allow interested students to learn about real-time applications by developing

actual projects under the guidance of experts from our community with many years of experience in this field. We hope to see many of you in Nara in May.

The next Real Time Conference in 2016 will be held in Padua (Padova), Italy, organized by the Consorzio RFX, Euratom Enea-Association under the chairmanship of Adriano Luchetta, our CANPS award winner from 2010.

More information about the CANPS committee with an updated member list can be found at <http://ewh.ieee.org/soc/nps/tc-canps.html>

Martin L. Purschke, chair of the Computer Applications in Nuclear and Plasma Science (CANPS) Technical Committee, can be reached at Brookhaven National Laboratory, Upton, NY 11973. Phone +16313445244; purschke@bnl.gov

SADLY FOR US

You don't have power if you surrender all your principles - you have office.

Ron Todd

NUCLEAR MEDICAL AND
IMAGING SCIENCESDimitris Visvikis
NMISC Chair

The 2013 IEEE NPSS Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) was held at the COEX Convention Center in Seoul, South Korea, from Oct. 27th -Nov. 03rd. The meeting was a great success with a total of 2369 participants from 48 different countries. Out of a total of 691 abstracts that were submitted to the MIC program, 129 and 505 were accepted for oral and poster

presentations respectively. It is also worth highlighting that Topic Advisors were successfully introduced for the first time during the review process of the MIC abstracts for each of the thematic categories covered by the meeting (two topic advisors/category). The purpose of these Topic Advisors is to assist the MIC Program Chair and Program Deputy Chair with the review process and the selection of oral and/or poster presentations. I would like to congratulate Jae Sung Lee (MIC Program Chair) and Craig Levin (MIC Program Deputy Chair) for the success of the MIC meeting in Seoul as well as for successfully putting in place the associated necessary organization for the introduction of Topic Advisors which should be maintained for future meetings.

At this year's meeting we honored the work of two of our colleagues. Jeff Fessler from University of Michigan received the Edward J. Hoffman Medical Imaging Scientist award "for contributions to the theory and application of statistical image reconstruction methods in nuclear medicine, X-ray CT and magnetic resonance imaging." Martin Judenhofer from University of California, Davis received the Bruce Hasegawa Medical Imaging Conference Young Investigator Award "for contributions to small-animal imaging instrumentation and the development of preclinical simultaneous PET/MRI scanners." I extend my congratulations to both of them for their success. I would like to take this opportunity to encourage all of you to nominate worthy colleagues for both these awards by the 15th of July deadline (relevant information may be found on the NMISC website - <http://ewh.ieee.org/soc/npsc/nmisc/MICawards.html>). Please send your nominations to the NMISC Awards subcommittee chair Glenn Wells (gwells@ottawaheart.ca). Also every year there are four other NPSS awards for which you can all nominate eligible candidates from our community (details on the awards and associated nomination procedures can be found in <http://ewh.ieee.org/soc/npsc/awards.htm>).

The preparations are ongoing for this year's 2014 IEEE NSS/MIC meeting in Seattle, WA at the Washington State Convention Center from Nov. 8th-15th. Tony Lavietes will be the General Chair for the meeting, while Georges El Fakhri and Katia Parodi will serve as the MIC Program Chair and Deputy Program Chair, respectively. The innovation this year will be the absence of a conference booklet and conference bag so don't forget your smart devices! More details can be found on <http://nssmic2014.npsc-confs.org/>.

The 2015 IEEE NSS/MIC meeting will take place in San Diego, CA, at the Town and Country Resort from the 31st Oct to 7th Nov, and Vesna Sossi will be the General Chair for the meeting, while Adam Alessio and Lawrence MacDonald will serve as the MIC Program Chair and Deputy Program Chair respectively. In 2016 the IEEE NSS/MIC meeting is returning to Europe and will be held in Strasbourg, France with Maxim Titov as the General Chair. The process for the 2017 IEEE NSS/MIC meeting site selection is currently ongoing.

The newly elected Council members starting their three-year term from January 1st, 2014 are Dennis Schaart, Anna Celler, Stefaan Vandenberghe, Katia Parodi and David Brasse. During the NMISC annual meeting in Seoul we also had an election for a new vice-chair and I am happy to announce that Paul Marsden has started his two-year term as NMISC vice-chair on January 1st, 2014. I encourage all of you to volunteer as candidates for being Council members and help in serving the NMISC membership by gaining experience in matters associated with our community as well as the running of the MIC meeting. Five individuals are elected each year for a three-year term and more detailed information can be found on the NMISC webpage (<http://ewh.ieee.org/soc/npsc/nmisc/>). Please send your nominations to Andrew Goertzen (Goertzen@med.umanitoba.ca), the chair of the NMISC Nominations subcommittee.

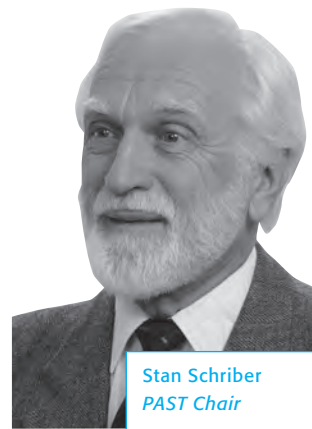
A joint RISC and NMISC subcommittee on Paper Submission Quality Assurance has concluded their

work producing a set of guidelines and selection criteria in order to help authors and reviewers in the preparation and review of submitted abstracts/summaries. These documents were approved by NMISC in December 2013 and will be passed on to MIC meeting program chairs for future use. Also, the changes to NMISC (and RISC) Constitution and By-Laws regarding the Joint Oversight Subcommittee (JOS) composition and operations were voted on and approved by NMISC, RISC and the AdCom and are published in this newsletter for comments.

In closing my first newsletter article, I would like to thank Suleman Surti for all his hard work as the NMISC chair during the last two years. I am sure his advice as the most-recent past chair will be invaluable. I look forward to working with all of you in serving our community.

Dimitris Visvikis can be reached at the National Institute of Health and Medical Research (INSERM), UMR1101, LaTIM, CHRU Brest, Bat 1, 2 avenue Foch, Brest, FRANCE; Phone: +33 298-01-81-14; Fax: +33 298-01-81-24; E-mail: dimitris.visvikis@inserm.fr

PARTICLE ACCELERATOR SCIENCE AND TECHNOLOGY



Stan Schriber
PAST Chair

Stan Schriber serves as the Chair of the Particle Accelerator Science and Technology (PAST) Technical Committee (TC) from 2009 January until 2014 December.

The PAST TC is organized with the following responsibilities. As the past PAST Chair, Ilan Ben-Zvi (BNL) is in charge of the Fellows and Awards subcommittee; responsible for nominating our PAST award candidates and fellows. As the former past PAST Chair, Bruce Brown (FNAL) is in charge of our Web and Communications subcommittee; responsible in part for our PAST TC web site. Our elected PAST TC member for IEEE-NPSS AdCom, Bob Zwaska (FNAL), is chair of our Nominating, Education and Outreach subcommittee (includes Women in Science and Engineering events) working with the previous PAST TC elected member Sandra Biedron (Col. State); responsible in part for nominating members who could be elected to serve on the IEEE-NPSS AdCom, and for managing and operating our IEEE booths at NA-PAC and IPAC conferences held in North America. And finally, Paul Schmor (TRIUMF) is chair of our Conferences subcommittee. Anyone interested in participating in any of these subcommittees should get in touch with the subcommittee chair.

Other members of the PAST TC committee are PAC'11 chair Thomas Roser (BNL), IPAC'12 chair Vic Suller (LSU), NA-PAC'13 chair Steve Gourlay (LBNL), IPAC'15 chair Andrew Hutton (JLab), NA-PAC'16 chair Marion White (ANL) and IPAC'18 chair Lia Merminga (TRIUMF).

NA-PAC'13

The successful North American Particle Accelerator Conference (NA-PAC'13) (the 26th xPAC conference in North America) was organized jointly by the Lawrence Berkeley National and the SLAC National Accelerator Laboratory (SLAC). The conference (<http://www.napac13.lbl.gov>) with 511 attendees took place 2013 Sept 29th – Oct 4th in the Pasadena Convention Center. The Scientific Program Committee chaired by Alex Chao, SLAC

developed an exciting program of invited oral presentations, oral presentations and posters amounting to 573 in total submissions that should be published on JACoW in the near future. Several comments on the presentations were received - in summary they were that the oral presentations were some of the best ever heard at our PAC conferences. Already a pre-press version of 411 papers, which have been successfully processed and quality assured, is now online at: <http://appora.fnal.gov/pls/pac13/toc.htm>.

More details of NA-PAC'13 will be provided in the next newsletter.

Future Accelerator

Conferences:

Planning continues for the next particle accelerator conferences to be held in North America: IPAC'15 in Richmond, VA; NA-PAC'16 in Chicago, IL; IPAC'18 in Vancouver, BC; and PAC'19 to be hosted by Michigan State University at a site within Michigan close by to East Lansing.

In particular, our 2015 IPAC'15 conference will be a special because it will be the 50th anniversary of holding particle accelerator conferences in North America. Any suggestions for this anniversary event are most welcome – some comments have been received on the basis of those who were on the organizing and program committees for the PAC'65 conference held in Washington, DC with 760 participants. Please send suggestions to Fulvia Pilat [pilat@jlab.org] who is the IPAC'15 Local Organizing Committee Chair.

PAST Technical Committee:

There are significant changes with respect to plans for PAST mentioned in the previous newsletter. Stan Schriber will now be stepping down as chair of the PAST TC at the end of December 2014. The PAST TC discussed actions to be taken for a new PAST TC chair at their 2013 October 1st meeting. PAST will no longer be an appointed committee within IEEE-NPSS. Based the goal of IEEE-NPSS AdCom to have all NPSS technical committees elected rather than having a few continue as appointed committees, we agreed on this course of action as appropriate for the PAST TC. A subcommittee worked on a new Constitution and set of Bylaws (C&BL) for an elected PAST technical committee, and this new C&BL has been approved by IEEE-NPSS – the C&BL can be found on the PAST TC website. To get the new PAST TC initiated with elections, we will have to fill a number of positions using the IEEE-NPSS voting process this fall, positions listed below. Members of PAST wishing to make recommendations for the seven officers of PAST to be elected with a starting date of 2015/01/01, should get in touch with Stan Schriber at the E-mail address listed below as soon as possible, so these recommendations can be considered while we are working on the details of the election. Please read the PAST TC C&BL for how this process is organized.

1. Stan Schriber will remain as PAST Past Chair for two years with no election process required.
2. Election of a PAST Chair for a 4 year appointment – first two years as the Chair and the next two years as the Past Chair – two individuals to run in election.
3. Election of PAST Vice Chair for a six-year appointment - first two years as Vice-Chair, next two years as Chair and final two years as Past Chair: - two individuals to run in election.
4. Election of four PAST Members-at-Large: six individuals listed for election of four slots - highest vote is four-year term, second highest vote is three-year term, third highest vote is two-year term and forth highest vote is one-year term.
5. Election of one GOLD PAST Member-at-Large for a two-year appointment - two GOLD individuals to run in election.

In the future there will be an election of one Member-at-Large every year for a four-year term, and every two years there will be an additional election of a GOLD Member-at-Large.

Stan Schriber can be reached at his home in Eagle, ID 83616 USA; Phone: +1-208-631-8208, E-mail: schriber@nsl.msu.edu

PULSED POWER SCIENCE AND TECHNOLOGY



Juergen Kolb
PPST Chair

The year 2013 ended with another great loss for the Pulsed Power Community. Shortly before Christmas Dr. Robert 'Bob' Barker passed away. Dr. Barker was an outstanding individual and a visionary who helped shape research directions in pulsed power like no other during the last decades. Many ideas that turned into successful programs and a large number of careers owe their foundation and advancement to his initiative, support and tireless efforts. In his pursuit and dedication Dr. Barker became a friend for many of us while at the same time the Pulsed-Power Community became part of his extended family. Dr. Robert J. Barker will be dearly missed but certainly not forgotten. (See Obituary, p.16)

More pleasant news was the announcement of Weihua Jiang's elevation to the rank of IEEE Fellow with the class of 2014. Dr. Jiang is a Professor at Nagaoka University of Technology, Japan, and is receiving this honor "for contributions to repetitive pulsed power generation utilizing solid-state device technology." Congratulations! (See Awards under Functional Committees, p. 10)

With the start of the year 2014 we welcome four new voting members on the Committee: Steve Calico (Distinguished Technical Group Member, Lockheed Martin Missiles & Fire Control), Bucur Novac (Professor of Pulsed Power, School of Electronic, Electrical and Systems Engineering, Loughborough University, United Kingdom), Gerald Cooperstein (Consultant for Pulsed Power, Naval Research Laboratory), and Mark Crawford (Group Leader Pulsed Power and Diagnostics, Los Alamos National Laboratory). With the new members our committee has again reached its 'full strength' of 20 voting members. A complete list of voting members and ex-officio members can be found on our webpage together with their contact information: <http://ewh.ieee.org/soc/npsc/tc-ppst.html>. I would like to encourage you to make use of the webpage and the contact information that is provided there if you are interested in getting involved with the work of our Committee, to provide feedback and most importantly to help in shaping its future.

The participation of the Pulsed Power Community that is housed in the NPSS is crucial for us and with the transition to an elected committee we hope to inspire an even more active involvement, stimulate the pursuit of new ideas, and make the PPS&T a vibrant meeting place for the Pulsed Power Community. As we move along in this process we will provide more details and information through this newsletter. Accordingly we expect to present the currently conducted revision of our Constitution and Bylaws later this year for review and comments.

The revision of our statutes is one of our most important tasks for the current year. In preparation for the associated changes we have started to consolidate functions and subcommittees. As such the position of a Vice Chair was introduced. For the ongoing support of conference committees we have now further established standing subcommittees for Finances, Awards, Publications, and Publicity. However, I would like to seize this opportunity to introduce here in particular two other new subcommittees that are not directly related to our conference work. The first one is our Membership Subcommittee which will be serving as a point

of contact for anybody looking for like-minded colleagues with an interest in the topics of Pulsed Power Science and Technology. Another service that is offered by this subcommittee is the support for the elevation of NPSS members that are active in the area of Pulsed Power to the status of Senior Member. Hereby we would like to help in particular by identifying nominators and collecting recommendations from Senior Members. If you would like to learn more about the possibilities to become more active in NPSS activities or would like to ask questions about the process on how to become a Senior Member of the IEEE, please don't hesitate to contact Stephen Bayne (stephen.bayne@ttu.edu) who is currently chairing this subcommittee. The efforts of the Membership Subcommittee are taken one step further by our IEEE/NPSS Awards and Fellowship Subcommittees, which offer a similar point of contact for the identification of candidates for awards and for elevation to rank of IEEE Fellow. If you are thinking about becoming an IEEE Fellow for your contributions to the field of Pulsed Power Science and Technology, or if you would like to put forward one of your colleagues for this honor or for one of the prestigious IEEE/NPSS Awards, the chair of the subcommittee, Edl Schamiloglu (edls@unm.edu), will be happy to answer any questions.

A good way of getting more involved with our work and to advance the field of pulsed power gladly accepts volunteer work for our conferences. Assuring high academic standards and an enjoyable conference experience is only possible by pulling expertise and forces together. The next Pulsed Power Conference will be held in Austin, Texas from May 31st – June 4th, 2015. If you are interested in contributing to this meeting, now is the time to contact the conference chair Mark Crawford (mtc@lanl.gov). Since it will be a while before we will meet at this venue, I would like to finish this report by bringing some other conferences in 2014 to your attention that are discussing topics in pulsed power – many of them have been technically cosponsored by NPSS and supported by our committee in the past: IEEE International Conference on Plasma Science & High Power Particle Beams (ICOPS/BEAMS 2014), May 25th-29th, 2014, Washington, DC; 17th International Symposium on Electromagnetic Launch Technology (EML) to be held from May 26th-30th, 2014, in San Diego, CA; IEEE International Power Modulator and High Voltage Conference (IPMHVC) to be held June 1st-5th, 2014, in Santa Fe, NM. My colleagues on the Pulsed Power Science and Technology Committee and I will be happy to meet you on these occasions.

Juergen Kolb, Chair of the Pulsed Power Science and Technology Technical Committee, can be reached by E-mail at: juergen.kolb@inp-greifswald.de.

RADIATION EFFECTS



Marty Shaneyfelt
Chair

See reports under CONFERENCES (NSREC Prepares for Paris) and Awards (2013 IEEE Nuclear and Space Radiation Effects Awards).

RADIATION INSTRUMENTATION

We have just completed the very successful 2013 Nuclear Science Symposium and Medical Imaging Conference (2013 NSS/MIC, <http://www.nss-mic.org/2013>) that took place in Seoul, South Korea from 27th October to 2nd November at the COEX Convention Center. Being the first Asian venue for this conference, the committee was committed to



Tony Lavietes
Chair

making the conference a success – and succeed they did! The committee created an outstanding program that drew an exceptionally high number of attendees. The concerns generated by actions in North Korea earlier in the year, coupled with fiscal issues in the U.S. in the weeks prior to the conference were quickly dismissed as the event unfolded. The overwhelming success of this conference will ensure that other Asian locations will be seriously considered for future conferences. Congratulations to Dr. Hee-Joung Kim (2013 NSS/MIC General Chair) and his excellent committee for organizing this memorable event.

The Radiation Instrumentation community had many awards in 2013. Several of these awards (See Awards section under Functional Committees) were presented during 2013 Nuclear Science Symposium:

The Radiation Instrumentation Outstanding Achievement Award

This award was established in 2001 to recognize outstanding contributions to the fields of radiation instrumentation and measurement techniques for ionizing radiation over a long career. This award is presented every year at the IEEE/NPSS Nuclear Science Symposium and comes with an engraved plaque and a \$3,000 check. The recipient of the 2013 award was Professor Lars Furenid. After a decade in basic research with synchrotron radiation at the Brookhaven National Laboratory, he joined the University of Arizona in 1998 as a founding member of the Center for Gamma Imaging (CGRI). His contributions to radiation instrumentation span a wide gamut, including new data acquisition electronics, methods for energy and position estimation, novel gamma-ray and particle detectors, new imaging systems and even imaging concepts, and education. The citation on the plaque reads: *For contributions to radiation detectors, acquisition electronics and novel imaging systems, including adaptive systems that autonomously alter their imaging configuration in response to initial images from a specific subject.*

The Radiation Instrumentation Early Career Award

This award recognizes a young investigator, within 10 years of the Ph.D., for significant and innovative technical contributions to the fields of radiation instrumentation and measurement techniques for ionizing radiation. The prize, consisting of \$1,500 and an engraved plaque, is awarded at the IEEE/NPSS Nuclear Science Symposium. The recipient of the 2013 award was Dr. Rafael Ballabriga Sune, a graduate of the University of Ramon Lull LaSalle in Barcelona, where he received his Ph.D. in Electronics Engineering in 2009. He then joined CERN in Geneva, Switzerland where he studied new approaches to spectroscopic X-ray imaging. The citation on the plaque reads: *For the implementation of a new approach to spectroscopic X-ray imaging, with registration of photon energies, using semiconductor devices with in-pixel processing for each individual incident photon.*

Although unable to be present, Dr. Veljko Radeka was awarded the prestigious IEEE Marie Skłodowska-Curie Award for the development of new radiation detectors, electronics, and systems that operate at

the fundamental limits of performance, enabling discoveries in many areas of science.

In addition to the conference activities, we held two elections within our community. The first was the annual election of five representatives on the Radiation Instrumentation Steering Committee (RISC). It is a pleasure to introduce and congratulate the most recent Radiation Instrumentation Steering Committee (RISC) members: David L. Chichester, Christer Fröjd, Chiara Guazoni, Martin Purschke, and Daniel Stephens. Each was elected for a three-year term (2014-2016) – they join present RISC members Etienne Auffray, Ralf Engels, Dick Lanza, Maxim Titov, and Gary Vamer. Lorenzo Fabris, Michael Fiederle, Michael Hynes, Paul Lecoq, Craig Woody, As of 1 January 2014 the RISC officers were: Tony Lavietes, Chair; Patrick Le Dû, Vice Chair; and Chuck Melcher, Most Recent Past Chair. Continuing for 2014 are Brad Roscoe, RISC Secretary and Sara Pozzi, RISC Awards Chair. Thank-you to outgoing RISC members: Ingrid-Maria Gregor, Ralph James, Susanne Kuehn, Bill Moses, and Anatoly Rosenfeld for their three years of service.

The second election was to select a Radiation Instrumentation Technical Committee Representative (one of two seats) on the NPSS AdCom. I would like to introduce and congratulate Dick Lanza and wish him well in his newly elected position. I would also like to recognize and thank the outgoing NPSS Representative, Glenn Knoll, for his outstanding contributions.

It should be noted that, while Bill Moses' term on RISC is ending, he will not be resting easy, as he was recently elected as the new Director-Elect for Division IV and will be taking on ever more responsibility within IEEE. Please join me in congratulating Bill on his new position.

We are now looking forward to the next conference, the 2014 NSS/MIC (<http://www.nss-mic.org/2014>) that will be held in Seattle, Washington. The format of this conference is being completely revised to transition to a more environmentally-friendly format. One of the biggest changes will be a move to a completely paperless event. To fill the requirement for a program booklet, an exceptionally elaborate application is being created that will be compatible with all smart devices (e.g., smartphones, tablets), as well as a web-based implementation. Other significant enhancements are in the works, so visit the conference website to get caught-up on the latest information.

Upcoming Conferences

2014: 10th Nov – 15th Nov
Seattle, Washington
Tony Lavietes, General Chair
Ingrid-Maria Gregor, NSS Program Chair

2015: 1st Nov – 7th Nov
San Diego, California
Vesna Sossi, General Chair
John Valentine, NSS Program Chair

2016: 29th Oct – 5th Nov
Strasbourg, France
Maxim Titov, General Chair

RITC Constitution and Bylaws

Bylaw 3.5 of the RITC Constitution and Bylaws has been newly revised. Please visit the website (<http://ewh.ieee.org/soc/nps/tc-ritc-constitution.pdf>) to review the changes – highlighted for your convenience. Any objections to the revised Constitution and Bylaws must be submitted in writing to Brad Roscoe, RISC Secretary (roscoe@slb.com) within ninety day of the mailing date of this notice.

Detail of the duties of the NSS/NMISC Joint Oversight Committee appear below.

Joint Oversight Subcommittee Terms of Reference

1. Responsibilities

The responsibilities and authority of the Joint Oversight Subcommittee (JOS) are defined and limited as follows.

1.1. Shall organize and facilitate the selection process of future Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) sites.

The purpose of this activity is to provide a list of not less than three candidate NSS/MIC conference sites for consideration by the Radiation Instrumentation Steering Committee (RISC) and Nuclear Medical and Imaging Sciences Council (NMISC).

1.1.1. Site Selection Process

1.1.1.1. Preliminary Candidate List

The deliverable from this component of the site selection process is the presentation of a preliminary list of all sites within given geographical regions to the Joint Executive Sub-Committee (JES) that may be considered as candidate sites for the NSS/MIC conference.

- The JOS Chair shall obtain site geographical region preferences from the JES.
- The JOS shall then investigate and identify all potential site locations within the guidance obtained from the JES.
- The JOS shall provide a preliminary list of potential sites, with a brief comparison of relevant site characteristics (including, but not limited to location, meeting space, guest room rates, and labor union costs [if applicable]) to the JES for review and approval prior to proceeding with further activities.

1.1.1.2. Detailed Site Analysis

The results of this element of the process shall be the delivery to the JES of a detailed report containing no more than five well-qualified candidate sites that correspond to the conference requirements and JES guidance.

- The JOS shall perform a detailed analysis of each site approved by the JES to further determine its respective suitability. On-line data collection, direct communication with each potential site, and contact with the associated Convention and Visitors Bureau (CVB) should be utilized to develop a profile of each site.
- Formal site visits shall not be conducted at this stage of the process.
- The preliminary candidate list shall be reduced to no more than five final candidates. This semi-final list shall be provided to the JES for concurrence. Exceptions can be considered, with justification, in the event that a particular geographic location does not result in five qualified candidate sites.
- In the case of locations outside the North American continent, special considerations shall be provided to accommodate the requirements for conference site selection and organization in those regions.

1.1.1.3. Final Selection

- The JOS shall conduct site visits for those sites contained in the semi-final with which there is no previous experience, or have undergone significant change since the last assessment. Site visits shall be attended by no more than three JOS members with preference for those living in close proximity to the candidate site. Exceptions must be approved by the JES.
- Verification of the suitability and quality of the site and surrounding area shall be performed and documented. A final report comparing all semi-final site candidates shall be provided to the JES. This report shall also contain the JOS recommendations and rank-order of the list with requisite support for the final assessment.
- The JES shall provide the final report to the RISC and NMISC for review and approval. Feedback from the RISC and NMISC shall be provided to the JOS through the JES concerning any changes to the rank-order of the final candidate site list.
- In the event that the final report is not accepted by either the RISC or NMISC, the JOS shall be directed to re-open and repeat the site selection process. Guidance with respect to the reasons for disapproval of the report shall be provided to the JOS to assist in the site selection process.
- The JOS shall conduct a final site selection vote. Written results of the final site selection vote shall be reported to the JES.

1.2. Shall facilitate the selection process of the conference General Chair.

1.2.1. General Chair Selection Process

Responsibility for selection of the General Chair position for the NSS/MIC shall alternate between the RISC and NMISC on an annual basis. Candidates for the position will be provided to the JOS from the respective committee for qualification assessment. Each candidate must provide his/her written agreement to serve in the position prior to submitting the list to the JOS.

1.2.1.1. Candidate List

The JOS shall provide a detailed report on each prospective General

Chair candidate to the requesting committee. The report shall include the following information:

- Biographical information or CV.
- Relevant conference organization experience including positions and responsibilities.
- IEEE membership status.
- Candidate's written statement of acceptance and concept of conference execution.

1.2.1.2. General Chair Selection

The respective committee shall evaluate the JOS report and hold a vote to select the General Chair. The vote shall include all eligible members of the respective committee. At the conclusion of the vote, the results will be reported to the alternate committee and the JOS. In the event that the General Chair must be selected as part of the site selection process, the JOS shall facilitate the consideration of the proposed General Chair from the respective committee (RISC or NMISC) during the site selection process. For example, this is a typical requirement when selecting a site in Europe.

In the event that the elected General Chair cannot fulfill his/her duties or is removed from office, the responsible committee (e.g., RISC or NMISC) shall immediately begin the process to elect a replacement General Chair using the process described above. In the interim, the JES and JOS Chair shall jointly identify a temporarily General Chair, if necessary.

1.3. Shall maintain an NSS/MIC Conference Requirements Document specifying site characteristics necessary to satisfy the needs of the conference (e.g., meeting space, food and beverage events, and attendance profile). Revisions to the NSS/MIC Requirements Document require JES approval.

1.4. Shall assist the conference committee if requested by the General Chair.

1.5. Shall maintain an on-line database of site information and respective evaluation results.

1.6. Shall maintain an on-line submission capability for collecting suggested future conference locations.

1.7. Shall solicit site proposals from the NSS/MIC community.

1.8. Shall evaluate the annual NSS/MIC attendee survey for additional information as it applies to future NSS/MIC site selection.

1.9. Shall provide status reports to RISC and NMISC committees at the annual NSS/MIC conference, and when requested by a committee chair.

1.10. Perform an annual review of this Terms of Reference document and revise as necessary. Revisions require JES approval.

2. Deliverables

The procedures associated with the following list of deliverables expected from the JOS are contained in other related sections of this document. This list is not exhaustive, but contains the minimum essential deliverables that fulfill the responsibilities of the JOS, as described in Section 5 (Responsibilities) and Section 7 (Scope/Jurisdiction).

2.1. NSS/MIC Site Selection

- Preliminary candidate site list delivered to the JES.
- Semi-final candidate site list delivered to the JES.
- Final, detailed site evaluation reports delivered to the JES.
- Final site selection vote results delivered to the JES.

2.2. NSS/MIC General Chair Selection

- Detailed candidate reports delivered to the requesting committee (RISC or NMISC).

2.3. NSS/MIC Conference Requirements Document

2.4. On-line database of site information and respective evaluation results.

2.5. On-line submission capability for collecting suggested future conference locations.

2.6. Status reports to RISC and NMISC committees.

3. Scope / Jurisdiction

The JOS is tasked with the following responsibilities:

3.1. NSS/MIC Site Selection Support

- The JOS shall use the site location guidance provided by the RISC and NMISC (through the JES) to identify suitable locations for future NSS/MIC conferences. Potential location information can be obtained from any source (e.g., RISC, NMISC, JES, JOS, RITC, NMISTC, non-RITC and non-NMISTC communities).
- Preference should be given to sites not used within the previous ten years. In the event that no suitable sites are identified within a region other than those already used within the previous ten years, the JES shall be consulted to determine whether a different region should be considered.

3.2. NSS/MIC General Chair Selection Support

- The JOS shall assist the RISC and NMISC in the selection of the General Chair by creating a report for each candidate as articulated in Section 5.2.

3.3. Maintenance of Related Documents and Records

- The JOS is responsible for maintaining the following items as articulated in Section 5:
 - o JOS Terms of Reference
 - o NSS/MIC Conference Requirements Document
 - o On-line database of site information and respective evaluation results.
 - o On-line submission capability for collecting suggested future conference locations.

3.4. NSS/MIC Conference Support

- Upon request from the General Chair, the JOS shall provide any support in which it is qualified, or if not, assist in identifying and enlisting the necessary support.

4. Guidance from the RISC and NMISC

The JOS shall operate and execute its responsibilities as directed by the JES. The JOS Terms of Reference (this document) is the guiding reference for definition and execution of JOS and JES activities. The Conference Profile and Site Requirements document shall be maintained by the JOS and used as guidance in the execution of its duties. This document, at a minimum, contains the following guidance and reference information:

- Conference Space Requirements
- Hotel Room Requirements
- Food and Beverage Event Requirements
- Network Requirements
- Characteristics Watch List

5. Resources and Budget

Funding for JOS expenses shall be provided by the General Chair of an appropriate NSS/MIC conference budget. In the event that no conference budget is available for supplying the necessary funding, JOS activities that incur expenses will be postponed until funding becomes available. An annual estimate of anticipated expenses shall be provided to the JES for review. Once approved by the JES, the JOS Chair shall provide the funding request to the respective NSS/MIC General Chair.

TWO-WAY STREET

Science can purify religion from error and superstition, and religion can purify science from idolatry and false absolutes.

Pope John Paul II

Functional Committees



Peter Clout Presents Hal Flescher with IEEE Hall of Honor Plaque

AWARDS

IEEE Hall of Honor

Harold Flescher

Roger Pollard was the VP of TAB (Technical Activities Board) of the IEEE some four years ago. TAB is made up of the Society, Council and Technical Committee Presidents, the Division Directors and TAB leadership and it sets policy for technical activities in IEEE and thus policies under which our society works. Following Roger's year as TAB VP he was elected to be IEEE Secretary and during his term he died after a short and sudden illness. Everyone in TAB was stunned by his sudden death some two years ago. He had made such a magnificent contribution to the leadership of TAB and IEEE and we all knew that he had many more contributions to make, but these were not to be.

At the instigation of the members of TAB, a small committee was set up to find a meaningful way to remember Roger. I served on that committee last year (2012). From this came the concept of having somewhere to honor IEEE volunteers that have made significant contributions in Technical Activities.

The Hall of Honor recognizes living and deceased volunteers and details the work the honorees did to justify their inclusion. I expect that this first class of honorees will inspire and embolden current and future volunteers. Of course, it is too soon to tell the impact, but I have to confess that I am excited about the influence that the Hall of Honor will have on TAB by emboldening new members of TAB.

Each year a number of honorees can be chosen and while all the details are on the web site at ieee.org/about/volunteers/tab/tab_hall_of_honor.html the primary requirement is that the honor is for contributions beyond one society or council etc.

Hal Flescher was nominated and chosen as one of the first class of honorees "For enhancing the ability of TAB/IEEE to support technical activities, particularly through better financial management." The plaque and certificate were presented to Hal at the November TAB meeting.

The specific achievements cited to justify the award were:

In 1991, as the Nuclear & Plasma Physics Society (NPSS) President:

Changed society structure so technical conferences now report to and are fiscally managed by their specific technical community, instead of NPSS AdCom. Hal was the primary contributor to two major rewrites of the NPSS Constitution/Bylaws, reflecting actual management practices and new activities.

In 2001, as TAB Treasurer:

Developed rules that enable OUs with reserves to budget up to 3% of their reserves (up to 1% of TAB reserves) for initiatives. Developed rule that permits OUs with adequate reserves to spend up to 50% of previous year's operational surplus for initiatives.

In 2002, as TAB Treasurer:

Responsible for changing IEEE indirect infrastructure funding methodology to a percentage of product gross revenue, thereby providing a stable revenue stream for IEEE indirect infrastructure and permitting a rationalized and stable budget process without extra costs. Created an Infrastructure Reserve, with loans from TAB and MGA, to fund future large infrastructure projects.

In 2012, as IEEE Treasurer:

Sponsored AdHoc to eliminate irrational algorithms for distributing direct infrastructure.

Prior rules were creating adversary relationships between OUs. Now all direct and indirect infrastructure funding is done from a single percentage of package product revenues.

In 2008, as Chair of TAB SPC:

Initiated and continued as leader of IEEE Technology Navigator tool. Originally to provide more visibility for IEEE Technical Society/Council activities, it was expanded to become an all-IEEE tool: the IEEE Technology Enterprise search tool. Already a part of IEEE's Call-in Center's standard processes, it is used by members and nonmembers around the world (100k hits in first half of 2013). New features will make IEEE membership more desirable and help sell IEEE products. (technav.ieee.org)

In 1988, as IEEE-USA R&D Policy Committee Vice-Chair:

Wrote white paper on DoD R&D funding, requesting changes that were subsequently implemented in U.S. government R&D food chain.

In 2003, as Division IV Director and Delegate:

Proposed BoD motion that provided IEEE-USA stability with inflation-adjusted funding.

This and more can be found easily by searching for "TAB hall of honor"

Congratulations to Hal Flescher!

This article was prepared by Peter Clout who can be reached by E-mail at clout@vista-control.com. Hal Flescher, our first Hall of Honor member, can be reached by E-mail at h.flescher@ieee.org.

Class of 2014 NPSS Fellows

The IEEE offers Institute Awards, and most Societies and Society Technical Committees also offer awards. Elevation to IEEE Fellow is a prestigious honor awarded each year to no more than 0.1% of the full IEEE membership by the Institute's Board of Directors. Nominations are made from among Senior Members and nominees must be supported by at least six Fellows. After being reviewed and ranked by the appropriate IEEE Society, the nominations are forwarded to the Institute's Fellow Committee who then recommend a list of candidates to the IEEE Board of Directors for their consideration. The Nuclear and Plasma Sciences Society is justifiably proud of its Fellows. We present here the Class of 2014 Fellows, and wish them each our heartfelt congratulations.[Editor's note]



Michael E. Cuneo

Michael Cuneo received a Ph.D. in Nuclear Engineering from the University of Michigan in 1989 for research on plasma evolution in electron beam diodes. Since 1989, he has been with the Pulsed Power Sciences Center at Sandia National Laboratories. Over the course of his career he has performed research in a variety of topical areas, all in the pursuit of pulsed-power-driven thermonuclear fusion. He contributed to research in power flow, ion diodes, ion sources, electrode plasma characterization and mitigation, z-pinch-driven hohlraums and indirect-drive capsule implosions for Inertial Confinement Fusion (ICF), wire array z-pinch physics, K-shell x-ray sources, and magnetically-driven direct-drive implosions for ICF. He has published as author or co-author more than 150 refereed papers in these areas, including three first-author invited topical reviews, with 18 in Physical Review Letters. He has an h-index for cited papers

of 30. He was Manager of Radiation and Fusion Experiments from 2007 to 2013. He is presently Senior Manager of the Pulsed Power Accelerator Science and Technology group.

Cuneo made two key contributions in magnetically driven inertial fusion. He experimentally realized a novel concept, the double-ended hohlraum (DEH) radiation source, for Sandia's pulsed power facility, Z. Subsequently, his experiments with wire-array z pinch x-ray sources used for the DEH led to a comprehensive understanding of the physics of single and nested wire-array implosions at high current (20 Mega-Amperes). The DEH allowed the team to show radiation drive symmetry for indirect drive ICF capsules of 2-3%, which allowed record ICF capsule compressions for pulsed power drive. The DEH served as an organizing principle for a broadly influential body of work in pulsed power. More than 45 refereed journal articles related to the DEH were published, which have been cited more than 1000 times. This work was done in collaboration with Jim Hammer, John Porter, Roger Vesey, Guy Bennett, Dan Sinars, Bill Stygar, and others.

Cuneo also developed electrode-cleaning techniques to mitigate anode and cathode plasma formation in pulsed power devices. Plasma formation from ~10 to 100 monolayers of low Z electrode contaminants such as H₂O, H₂, CO, CO₂ result in fundamental limits on the performance of electron-beam and ion-beam diodes, as well as other high voltage devices. Cuneo did seminal research that showed the effects of plasmas formed from contaminants on ion diode performance could be significantly reduced using in-situ electrode cleaning techniques. Device sensitivity to electrode contamination, and mitigation by electrode cleaning are now part of the broader tool kit of all pulsed power scientists.

This award has its roots in 25 years of highly collaborative work that Mike has done in Sandia's pulsed power center. Scientific work on pulsed power drivers is "big science", requiring the collaboration of large teams. Mike notes, "the award is ultimately a recognition of the amazing research environment at Sandia's pulsed power center, the fabulously talented people, and the achievements of the entire center over the last two decades."

Citation: *for developments in inertial confinement fusion with magnetically-driven implosions and electrode cleaning.*

Michael Cuneo can be reached by E-mail at, mecuneo@sandia.gov.



Weihua Jiang

Weihua Jiang is a Professor at Nagaoka University of Technology, Japan. He received his undergraduate degree and Master's degree in China from the National University of Defense Technology in 1982 and from the Institute of Atomic Energy in 1985, respectively. He moved to Japan in 1987 and received his Ph.D. in Energy and Environment Engineering from Nagaoka University of Technology in 1991. Since then, he has been teaching in the Department of Electrical Engineering while conducting research in Extreme Energy-Density Research Institute at Nagaoka University of Technology. During this time, he also spent one year at Texas Tech University, Lubbock TX, as a Visiting Associate Professor and two years at Tsinghua University, Beijing, China, as a Professor.

Dr. Jiang's research interests have been in high-power particle beams, high-power microwaves, and pulsed power technologies. He was educated and trained during the time when light-ion beams were developed as potential inertial confinement fusion drivers. He later focused on high-power microwave sources including virtual cathode oscillators, relativistic magnetrons, and large-orbit gyrotrons. Since early 2000s, he has mainly concentrated on the development and application of compact, repetitive pulsed power generators. Together with his collaborators, Dr. Jiang has developed different switching technologies and circuit configurations for pulsed power generation. In addition, he has carried out a series of experimental demonstrations for applications of pulsed power technology to environment protection and accelerator development.

Dr. Jiang has published two textbooks in Japanese and has translated two technical books from English to Chinese. He has authored/coauthored more than 200 journal articles. He has presented more than 60 papers at various international conferences as plenary, invited, or oral talks. He received the Pulsed Power Fundamental Research Award from the International Society on Pulsed Power Applications e.V. in 2012.

He is now a member of the International Advisory Committee for International Conference on High-Power Particle Beams (BEAMS) and a member of the International Organizers Committee for Euro-Asian Pulsed Power Conference (EAPPC). He is a member of IEEE NPSS Administrative Committee and a member of IEEE NPSS Standing Technical Committee for Pulsed Power Science and Technology. He has served the IEEE Transactions on Plasma Science as a Guest Editor for several times before working as a Senior Editor started in 2012.

Citation: *For contributions to repetitive pulsed power generation utilizing solid-state device technology*

Weihua Jiang can be reached via E-mail at jiang@nagaokaut.ac.jp



Thomas Melhorn

Dr. Melhorn is the Superintendent of the Plasma Physics Division at the Naval Research Laboratory in Washington, DC, and a member of the Department of the Navy (DoN) Senior Executive Service. He is responsible for a broad spectrum of research programs in plasma physics, laboratory discharge and space plasmas, intense electron and ion beams and photon sources, atomic physics, pulsed-power sources, radiation hydrodynamics, high-power microwaves, laser physics, advanced spectral diagnostics, and nonlinear systems. Dr. Melhorn earned his B.S., M.S. and Ph.D. in Nuclear Engineering from the University of Michigan in 1974, 1976 and 1978, respectively. He worked at Sandia National Laboratories in Albuquerque, New Mexico from 1978-2009 where his research interests included intense electron and ion beams generation, focusing and interactions; inertial confinement fusion; high energy density physics; Z-pinch physics; dynamic materials and shock physics; and advanced radiography.

Dr. Melhorn's research at Sandia in generating and focusing intense electron and ion beams driven by pulsed-power machines, such as Proto-I, PBFA-I, and PBFA-II, is the main basis for this recognition. It

also acknowledges his ongoing leadership of intense beam research at NRL on Gamble II and Mercury, as well as beams generated by ultra-short-pulse laser acceleration. He is perhaps best known for his comprehensive model for ion-beam stopping power in plasmas of arbitrary ionization which even today remains relevant to fast ignition, equation-of-state (EOS) experiments, and fusion burn models (154 citations and counting). This model was validated in the first measurement of enhanced ion stopping power in plasmas at NRL in 1982 and in Sandia experiments on Proto-I in 1985. He also developed the internationally used ITS V1.0 for electron/photon transport (1984) and extended its physics up to 1 GeV electron energy. From 1991 to 1994 he led the ion-beam project that ultimately focused a lithium ion beam on PBFA-II to 2 TW/cm² and heated a hohlraum to 65 eV; both world records. His contributions to ion-beam stopping, generation, transport, focusing, diagnostics, and applications are documented in his 1997 IEEE 25th Anniversary Review Article.

Dr. Melhorn received the University of Michigan Engineering Alumni Society Merit Award in Nuclear Engineering and Radiological Sciences in 2004. He has also received two NNSA Defense Programs Awards of Excellence, a Lockheed Martin NOVA award, and two NRL Alan Berman Research Publication Awards. Dr. Melhorn is a Fellow of the APS Division of Plasma Physics, a Fellow of the AAAS in Physics, and a member of the American Nuclear Society. He serves on a number of advisory boards and is a member of the IEEE PSAC Executive Committee. He served on a National Research Council (NRC) Division of Engineering and Physical Sciences panel on the Assessment of Inertial Confinement Fusion Targets (2011-2012). He is the author/coauthor of over 160 scientific and technical papers.

Citation: *for leadership in understanding intense, pulsed electron and ion beams.*

Thomas Melhorn can be reached by E-mail at thomas.melhorn@nrl.navy.mil



Charles (Chuck) Melcher

Following a background in luminescence physics and materials science as a graduate student at Washington University and as a post-doc at Caltech, Chuck began to focus on scintillation materials while at Schlumberger-Doll Research. As Program Leader of Advanced Detectors, he led a group that conducted fundamental investigations of various scintillation materials for potential use as gamma-ray detectors in geophysical exploration. These investigations led to the development of compact gamma-ray detectors for down-hole water saturation measurements in producing oil wells.

While at Schlumberger, Chuck invented a new scintillator material known as LSO (Lu₂SiO₅:Ce) which had promising properties for gamma-ray detection. LSO was quickly recognized as having particularly attractive properties for use in Positron Emission Tomography (PET), a molecular imaging technique for the early detection of diseases such as cancer and Alzheimer's. His first presentation about LSO earned an award at the NSS-MIC conference in Santa Fe, and the corresponding paper is one of the most highly cited articles in the Transactions on Nuclear Science.

In 1996 Chuck joined CTI, Inc. to form a team that continued to develop LSO for commercial PET

applications. This team collaborated with numerous researchers to further investigate fundamental properties of LSO while also developing prototype growth systems to demonstrate the feasibility of large-scale production. The successful development of a commercial-scale growth process led to the construction of a large crystal manufacturing facility, and LSO became a standard detector material in clinical PET scanners as well as in small-animal PET scanners. In addition, it is now under consideration for the next generation of high-energy physics calorimeters.

In 2005 Chuck organized a partnership between the University of Tennessee and Siemens to form the Scintillation Materials Research Center (SMRC). He joined the faculty of the Materials Science and Engineering Department at the University of Tennessee and became Director of the Center. The SMRC remains a successful academic-industrial partnership that follows a collaborative approach for the commercial realization of innovations in scintillation materials.

Chuck has been an active member of the IEEE and the NPSS for many years. In addition to numerous program committees, he has served as the Chair of the Radiation Instrumentation Technical Committee and as an Associate Editor of the Transactions on Nuclear Science. He received the NPSS Merit Award in 2006.

Citation: *for the discovery of a cerium-activated lutetium oxy-orthosilicate scintillator and its application to medical imaging*

Chuck can be reached at the Scintillation Materials Research Center, University of Tennessee, Knoxville, TN 37996-2100; Phone: +1 865 974-0254; E-mail: cmelcher@utk.edu.



Jinyi Qi

Jinyi Qi obtained his B.Eng. degree in Electrical Engineering from the Tsinghua University in Beijing. He conducted his early research in the field at the University of Southern California (USC) where he was a graduate student under the direction of Dr. Richard Leahy, obtaining a M.S. in 1997 and then his Ph.D. in Electrical Engineering in 1998. He moved to the Lawrence Berkeley National Laboratory (LBNL) as a Scientist and then on to the University of California at Davis where he is a Professor and Vice Chair in the Department of Biomedical Engineering.

Jinyi is particularly well known for his work to develop maximum a posteriori (MAP) 3D reconstruction algorithms for positron emission tomography (PET) that build on a Bayesian framework with accurate modeling of the imaging system and deliver stunning and quantitatively accurate images. During his Ph.D. study, he developed Bayesian reconstruction methods for fully 3-D PET. Through clever use of symmetries and multithreading techniques he was able to reduce image reconstruction time by orders of magnitude. Furthermore, through incorporating more accurate models of the photon detection process, he was able to improve significantly resolution in small-animal imaging scanners relative to any of the other reconstruction methods in use at that time. The MAP reconstruction software was then licensed to and distributed by Siemens and is in routine use in small-animal imaging laboratories throughout the world. More recently he has continued to develop efficient methods for iterative image reconstruction for the breast PET/CT scanner

and MR-compatible PET scanners at UC Davis in collaboration with Simon Cherry, Ramsey Badawi, and colleagues.

Coupled with his work on image reconstruction, Jinyi also contributed to the theoretical analysis of nonlinear MAP image estimators. Building on related work by Jeffrey Fessler of the University of Michigan, he developed simplified analytic formulae for rapid computation of the resolution and variance of MAP estimators. His early results included expressions for variance and covariance in 2D and 3D that account for the spatially variant response of the scanner and the effects of missing data in 3D. Working with Ronald Huesman and colleagues at LBNL, he extended the theoretical analysis to study lesion detectability and region-of-interest quantification, and developed methods for task-based selection of image reconstruction parameters and system optimization for the design of new PET scanners. His current work at UC Davis focuses on PET image reconstruction for multimodal systems, dynamic PET image reconstruction, fast reconstruction algorithms, and their clinical and preclinical applications.

Jinyi is a major contributor to the profession at large. He is an Associate Editor for IEEE Transactions on Medical Imaging, and a frequent reviewer for IEEE journals as well as other leading journals in the field, and has served on many NIH study sections. He co-organized the 12th International Meeting on Fully 3D Image Reconstruction in Lake Tahoe with Richard Leahy. He is a recipient of the IEEE-NPSS Young Investigator Medical Image Science Award and the IEEE-NPSS Early Achievement Award. He is also a Fellow of the American Institute for Medical and Biological Engineering (AIMBE).

Citation: *for contributions to statistical image reconstruction for emission-computed tomography*

Jinyi Qi can be reached at Department of Biomedical Engineering, University of California, Davis, One Shields Avenue, Davis, CA 95616. (530) 754-6142. qi@ucdavis.edu.



Robert A. Reed

Robert Reed received a Ph.D in Physics from Clemson University in 1994. He is currently a Professor of Electrical Engineering at Vanderbilt University. Prior to joining the Vanderbilt faculty he held positions at NASA/GSFC and Hughes Space and Communications Company.

Robert's research interests are related to the physics of failure of electronic and photonic devices and integrated circuits (ICs) when exposed to various radiation environments. In particular, he is interested in the susceptibility of these components to single event effects and displacement damage dose. He is a specialist in the cross-disciplinary area of radiation transport physics and semiconductor device physics. The specific areas of current interest are 1) developing a detailed understanding of the microscopic interaction of radiation with a semiconductor device to improve performance prediction techniques, 2) development and application of radiation transport and device physics modeling approaches to predict device/circuit performance when exposed to various radiation environments, and 3) improving qualification methods (test and simulation) used to predict radiation performance of future (and some existing) technologies. This research has significantly impacted the development of techniques associated with assessing the performance of commercial and radiation-hardened ICs when exposed to space,

man-made, and terrestrial radiation environments. Engineers and students affiliated with Vanderbilt University's Institute for Space and Defense Electronics are developing a space-based test-bed to evaluate the efficacy of these techniques. Robert has published more than 180 papers dealing with radiation effects in electronics (cited more than 2100 times).

Robert is a member of the IEEE Nuclear and Plasma Sciences Society Administrative Committee. He is the General Chairman for the 2016 IEEE Nuclear and Space Radiation Effects Conference (NSREC). He has also served the NSREC community as the Technical Program Chairman, Editor of the IEEE Transactions on Nuclear Science, Short Course Instructor, Short Course Chairman, and Finance Chairman.

His research awards include the 2013, 2010, and 2007 Outstanding Paper Award at NSREC, 2004 IEEE Nuclear and Plasma Sciences Society Early Achievement Award, and 2000 Clemson University Outstanding Young Alumni Award.

Citation: *for contributions to understanding the effects of single-event particle radiation on integrated circuits*

Robert Reed can be reached by E-mail at robert.reed@vanderbilt.edu

IEEE Field Award

2013 IEEE MARIE SKLODOWSKA-CURIE AWARD



Veljko Radeka

The 2013 IEEE Marie Sklodowska-Curie Award was given to Dr. Veljko Radeka of Brookhaven National Laboratory for his outstanding long-term achievements and contributions to the field of instrumentation and detector development covering a broad range of science. "

During the time Dr. Radeka has been working in the field of radiation detectors and nuclear instrumentation, his unique combination of skills as an electronics engineer, scientist, and team leader have led to important achievements in a remarkably wide range of applications, spanning particle physics, photon science, medical imaging, biological sciences, and homeland security. Throughout his career, he has consistently sought to reach the limits of detector performance imposed by underlying physical principles, rather than merely meeting the requirements of a specific experiment. His deep and insightful understanding of the fundamentals of low-noise signal processing and device physics has allowed many of the detectors we use today to reach unprecedented levels of performance, enabling new technologies and new science.

Dr. Radeka received a Doctorate in Engineering Sciences from the University of Zagreb in Croatia in 1961. He began his career in the U.S. in 1962 as a Research Associate at Brookhaven National Laboratory, later returning there as an Electronics Engineer in 1966. In his early career, he concentrated on the study of noise and gain characteristics of charge-sensitive preamplifiers, as well as optimizing the designs for pulse-shaping amplifiers. After the introduction of field effect transistors to the commercial market in the early 1960s, Dr. Radeka quickly realized that their characteristics would make them indispensable in front-end devices for high resolution particle

detectors. He then began developing a new series of low-noise preamplifiers that allowed many important and fundamental experiments to be done in nuclear and particle physics.

One groundbreaking development occurred in 1970, when Dr. Radeka, along with Dr. Robert Chase and Lee Rogers, developed circuits to discriminate extremely rare signals from background events in the Brookhaven solar neutrino experiment led by Dr. Raymond Davis. In this detector, neutrinos captured by chlorine in a huge underground tank of C₂Cl₄ produced ³⁷Ar at a rate of about 0.5 atoms per day. Proportional counters were used to detect the ³⁷Ar decays, but they were equally sensitive to background cosmic ray events, leading to a background rate of about 10 per month. Dr. Radeka developed an innovative circuit that used both risetime and amplitude discrimination to reduce this background by a factor of ten, which allowed the experiment to make this extremely difficult measurement with the precision needed to demonstrate convincingly that the flux of solar neutrinos reaching the earth was significantly smaller than that predicted by the standard solar model. Dr. Davis was awarded the Nobel Prize in Physics in 2002 for this work. In his Nobel Prize Lecture, Dr. Davis said "the pulse rise-time system gave the Homestake experiment a new life..." which was largely due to Dr. Radeka's contributions.

Later in the 1970s, Dr. Radeka and Prof. William Willis from Yale University developed a new technique for measuring the total energy of particles produced in high-energy particle collisions. This used a so-called sampling calorimeter consisting of alternating plates of metal absorber and gaps filled with cryogenically cooled liquid argon that detected the ionization charge produced by particles interacting in the calorimeter. It was then a highly innovative concept, but today has become one of the most widely used energy-measuring devices in nuclear and particle physics. Approximately half of all large high-energy physics experiments either use or have used this technique. Due to its design, it has allowed the construction of extremely large, yet very precise calorimeter systems, including the one used in the ATLAS experiment at the Large Hadron Collider at CERN, which led to the recent discovery of the Higgs boson and resulted in the 2013 Nobel Prize being awarded to Prof. Peter Higgs.

Among Dr. Radeka's many other contributions was the development of a novel centroid-finding filter that was used with position-sensitive gas proportional chambers. This unique circuit utilized the induced charge on a segmented cathode to produce an analog signal that could be used to determine accurately the centroid of the charge distribution in real time. It allowed for the rapid determination of the position of neutrons and X-rays in these detectors with only minimal gas multiplication, resulting in systems with exceptional long-term stability. This led the way for their use at numerous facilities around the world, particularly neutron reactors and spallation sources, where groundbreaking experiments in biological sciences have been made possible. Additional applications include luggage scanning and other material scanning detectors.

Dr. Radeka has also made significant contributions in the area of silicon detectors, pushing their limits in terms of position resolution, speed and radiation hardness, leading to their extensive use in many astrophysics experiments, including the Mars rovers Spirit and Opportunity, as well as to contributions to the Large Synoptic Survey Telescope Project. In addition, when the era of large-scale particle physics experiments coincided with the rise of CMOS as the dominant electronics technology and the trend towards all-digital signal processing, Dr. Radeka recognized that the analog characteristics of CMOS could be exploited to create highly-integrated front-end ASICs with performance equaling, and in some cases exceeding, that of earlier discrete circuitry. He and his group are now extending the reach of monolithic CMOS to extreme conditions of temperature and radiation.

Dr. Radeka was the Head of the Instrumentation Division at Brookhaven National Lab from 1972 until he stepped down from that position in November of 2012. However, he still remains active in many areas of research. His current interests include the development of three-dimensional monolithic circuits for signal processing, cryogenic electronics, imaging detectors for biology and medicine, and nanoscale and quantum-effect devices applied to charge measurement. He has over 200 publications, many of which are considered as seminal works in their field. He lectured extensively worldwide, and has been a regular instructor of a very popular short course on "Integrated Circuits for Nuclear Pulse Processing" at the annual IEEE Nuclear Science Symposium. He is a Life Fellow of IEEE, and has received a number of other IEEE Awards, including the Nuclear and Plasma Sciences Society's Merit Award, the NPSS Radiation Instrumentation Technical Committee's Outstanding Achievement Award, the IEEE Centennial Award, and the IEEE Harold Wheeler Award.

Citation: *For the development of new radiation detectors and electronics enabling discoveries in many areas of science over a period of more than 50 years.*

Veljko Radeka can be reached by E-mail at radeka@bnl.gov.

Craig Woody, who prepared this report, can be reached at woody@bnl.gov.

2013 Technical Committee Conference Awards

2013 NUCLEAR MEDICAL AND IMAGING SCIENCES AWARDS

2013 EDWARD J. HOFFMAN IMAGING SCIENTIST AWARD



Jeffrey A. Fessler

Jeff Fessler received the BSEE degree from Purdue University in 1985, the MSEE degree from Stanford University in 1986, and the M.S. degree in Statistics from Stanford University in 1989. From 1985 to 1988 he was a National Science Foundation Graduate Fellow at Stanford, where he earned a Ph.D. in electrical engineering in 1990. He has worked at the University of Michigan since then. From 1991 to 1992 he was a Department of Energy Alexander Hollaender Post-Doctoral Fellow in the Division of Nuclear Medicine. From 1993 to 1995 he was an Assistant Professor in Nuclear Medicine and the Bioengineering Program. He is now a Professor in the Departments of Electrical Engineering and Computer Science, Radiology, and Biomedical Engineering. He became a Fellow of the IEEE in 2006, for contributions to the theory and practice of image reconstruction. He received the Francois Erbsmann award for his IPMI93 presentation, and received the Edward Hoffman Medical Imaging Scientist Award in 2013. He has served as an associate editor for IEEE Transactions on Medical Imaging and the IEEE Signal Processing Letters, and is currently serving as an associate editor for the IEEE Transactions on Image Processing. He has chaired the IEEE T-MI Steering Committee and the ISBI Steering Committee. He was co-chair of the 1997 SPIE conference on Image Reconstruction and Restoration, technical program co-chair of the 2002 IEEE International Symposium on Biomedical Imaging (ISBI), and general chair of ISBI 2007. His

research interests are in statistical aspects of imaging problems, and he has supervised doctoral research in PET, SPECT, X-ray CT, MRI, and optical imaging problems.

Citation: *For contributions to the theory and application of statistical image reconstruction methods in nuclear medicine, X-ray CT and magnetic resonance imaging.*

Jeff Fessler can be reached by E-mail at fessler@umich.edu.

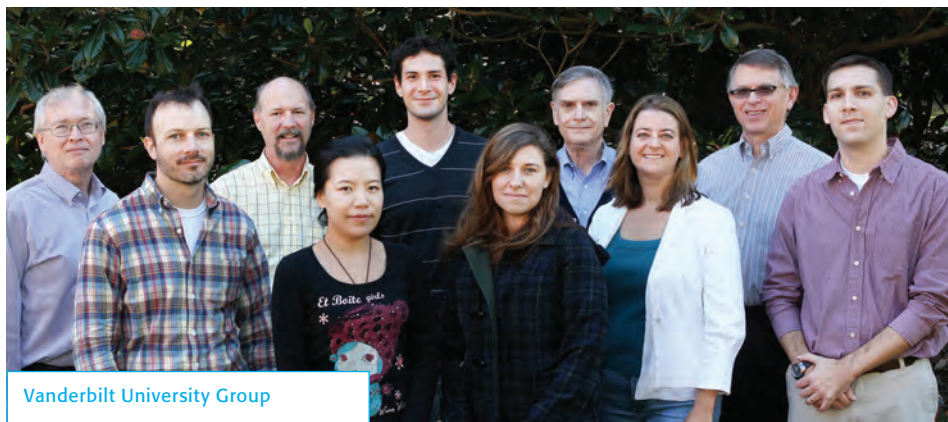
RADIATION EFFECTS TECHNICAL COMMITTEE AWARDS

It is a longstanding tradition of the IEEE Nuclear and Space Radiation Effects Conference to honor authors of the Outstanding Conference Paper and the Outstanding Data Workshop Presentation. In recent years recognition has also been given to the best paper presented and first-authored by an IEEE Student Member. The awards process not only rewards authors for particularly high quality and important work, but also encourages all authors to produce presentations and manuscripts of high technical quality, clarity of presentation, and significance to the community.

Although there were a number of strong candidates for the Outstanding Conference Paper, two papers stood out due to their high scores among all committee members. When two papers stand out from the other papers, there can be a Meritorious Paper Award given in addition to the Outstanding Conference Paper Award. This was the case this year.

It is our pleasure to announce the following 2013 NSREC Award winners:

2013 RADIATION EFFECTS OUTSTANDING CONFERENCE PAPER



Vanderbilt University Group

Electron-Induced Single-Event Upsets in Static Random Access Memory, M. King, R. Reed, R. Weller, M. Mendenhall, R. Schrimpf, B. Sierawski, A. Sternberg, B. Narasimham, J. Wang, E. Pitta, B. Bartz, D. Reed, C. Monzel, R. Baumann, X. Deng, J. Pellish, M. Berg, C. Seidleck, E. Auden, S. Weeden-Wright, N. Gaspard, C. Zhang and D. Fleetwood.

Abstract: We present experimental evidence of single-event upsets in 28 and 45 nm CMOS SRAMs produced by single energetic electrons. Upsets are observed within 10% of nominal supply voltage for devices built in the 28 nm technology node. Simulation results provide supporting evidence that upsets are produced by energetic electrons generated by incident X-rays. The observed errors are shown not to be the result of "weak bits" or photocurrents resulting from the collective energy deposition from X-rays. Experimental results are consistent with the bias sensitivity of critical charge for direct ionization effects caused by low-energy protons and muons in these technologies. Monte Carlo simulations show that the contributions of electron-induced SEU to error rates in the GEO environment depend exponentially on critical charge.

Note that the primary author of this paper was a student. Thus, this paper is also the winner of the 2013 IEEE Radiation Effects Outstanding Student Paper Award.

MERITORIOUS PAPER AWARD

Proton-Induced Upsets in SLC and MLC NAND Flash Memories, M. Bagatin, S. Gerardin, A. Paccagnella, V. Ferlet-Cavrois, J. R. Schwank, M.R. Shaneyfelt, and A. Visconti.

Abstract: We investigate proton-induced upsets in state-of-the-art NAND Flash memories, down to the 25-nm node. The most striking result is the opposite behavior of Multi-Level Cell (MLC) and Single-Level Cell (SLC) devices, in terms of floating gate error cross section as a function of proton energy. In fact, the cross section increases with proton energy in SLC whereas it decreases in MLC. The reason for this behavior is studied through comparison of heavy-ion data and device simulations. The main factors that determine proton energy dependence are discussed, such as the energy dependence of nuclear cross section between protons and chip materials, the LET, energy, and angular distributions of the generated secondaries, but also the heavy-ion and total dose response of the studied devices. Proton irradiation effects in the control circuitry of NAND Flash memories are shown as well.

OUTSTANDING DATA WORKSHOP

The Reliability of Software Algorithms and Software-Based Mitigation Techniques in Digital Signal Processors, H. Quinn, T. Fairbanks, J. Tripp and A. Manuzato.

Abstract: Digital signal processors (DSP) are microprocessor-like processing elements that are specifically designed for signal and image processing algorithms. DSPs share many of the same failure mechanisms as microprocessors, including component crashes, program crashes and silent data corruption (SDC). The root of these problems is often single-event upsets (SEUs) in caches or control circuitry. In testing we have found DSPs are very sensitive to SDC, where computationally incorrect

output data is produced but program execution is not affected. SDC can be problematic as it is hard to detect and could lead to the corruption of on-orbit data. We found that SDC could be reduced through the use of triple modular redundancy. In this paper we present data on how software on DSPs is susceptible to radiation-induced upsets and software techniques for reducing SDC.

RADIATION INSTRUMENTATION TECHNICAL COMMITTEE AWARDS

RADIATION INSTRUMENTATION OUTSTANDING ACHIEVEMENT AWARD



Lars R. Furenlid
Radiation Instrumentation
Outstanding Achievement Award

Professor Lars R. Furenlid was awarded the 2013 IEEE/NPSS Radiation Instrumentation Outstanding Achievement Award at the Nuclear Science Symposium and Medical Imaging Conference this past October in Seoul, South Korea. The prize consists of \$3,000 and an engraved plaque.

Dr. Furenlid is Professor of Medical Imaging and Professor of Optical Sciences at the University of Arizona in Tucson, Arizona. He is Associate Director of the Center for Gamma-Ray Imaging (CGRI), an NIH/NIBIB Biomedical Technology Resource Center that he helped cofound in 1999 with the mission of advancing the state of the art in spatial and temporal resolution in gamma-ray imaging instrumentation. He is also a member of the University of Arizona Graduate Interdisciplinary Degree Program in Biomedical Engineering and the Arizona Cancer Center.

Dr. Furenlid received a B.S. in Chemistry at the University of Arizona in 1983 and traces his interest in instrumentation to his astronomer father Ingemar, to an outstanding undergraduate course in electronics taught by Dr. Neal R. Armstrong, and to being a subscriber to Popular Electronics when the famed Altair 8800 issue launched the digital age. He received a Ph.D. at the Georgia Institute of Technology in 1988 under the mentorship of Prof. Ron H. Felton, using synchrotron-based X-ray spectroscopy to study active sites in metalloenzymes. This led to a post-doc at Brookhaven National Laboratory to study photosynthesis and methanogenesis, and a quest to design better detectors and methods for synchrotron X-ray fluorescence measurements.

Dr. Furenlid became a staff physicist at the National Synchrotron Light Source at BNL in 1990, running X-ray beamlines, developing X-ray optics, and working with Instrumentation Division scientists Dr. Hobie Kraner and Dr. Veljko Radeka and NSLS Ph.D. engineer Phil Pietraski on pixelated Si detectors for high-count-rate X-ray spectroscopy. This culminated in a 120-element prototype, read out with first generation FPGA integrated circuits.

It was a short leap from pixelated detectors for spectroscopy to imaging, and in 1998 he left Brookhaven to join Professor Harrison H. Barrett's effort to establish CGRI. Over the past 15 years Dr. Furenlid has worked with his colleagues and students at the University of Arizona to develop new detector technologies, acquisition electronics, and integrated imaging systems that focus on preserving the information content carried by each gamma-ray or X-ray photon. Imagers such as FastSPECT II and SemiSPECT are oft-cited examples of stationary and solid-state detector systems, respectively, that have broadly influenced preclinical SPECT designs. More recently, he has turned his attention to adaptive imaging systems, including CT, that reconfigure themselves in response to acquired data.

Dr. Furenlid is an active educator, teaching physics and imaging graduate courses at his home institution, mentoring masters and Ph.D. students, and organizing a long-standing IEEE short course on Physics of Detectors for SPECT and PET that has passed on the collective experiences of coinstructors Furenlid, Barrett, and Prof. Tom Lewellen of the University of Washington to NSS/MIC attendees. He is also an instructor on system design and advanced computational methods in a second NSS/MIC short course on Image Quality in Adaptive and Multimodality Imaging organized by Prof. Matt Kupinski.

Citation: *For contributions to radiation detectors, acquisition electronics, and novel imaging systems, including adaptive systems that autonomously alter their imaging configuration in response to initial images from a specific subject.*

Professor Furenlid can be reached via E-mail at furen@radiology.arizona.edu.

RADIATION INSTRUMENTATION EARLY CAREER AWARD



Rafael Ballabriga Sune

Rafael Ballabriga is a graduate of the Ramon Lull La Salle University in Barcelona, Spain (B.Sc. 2000, M.Sc. 2002, and Ph.D. 2009). In 2004, he joined the CERN Doctoral Student Program in Geneva, Switzerland. At CERN, he worked in the Medipix team of the microelectronics group on the design of hybrid pixel detector readout ASICs. His primary task was to find techniques to eliminate the distortion in the measured energy spectrum caused by charge sharing effects and fluorescence photons in segmented semiconductor detectors. In the designed architecture, the pixels on the ASIC communicate on an event-by-event basis, in order to identify the pixel with the largest energy deposition and assign to it the reconstructed charge over a larger-than-the-pixel sensor area. This is a method to retain spectroscopic information at high spatial resolution. The architecture was implemented in the Medipix3 chip where multiple thresholds combined with this innovative architecture for charge reconstruction enables accurate energy weighting X-ray imaging and K-edge imaging.

Dr. Ballabriga received the Nuclear Science Symposium Best Student Paper Award in 2006 for his paper *The Medipix3 Prototype, a Pixel Readout Chip Working in Single Photon Counting Mode with Improved Spectrometric Performance*. In 2009, he defended his Ph.D. thesis entitled "The Design and Implementation in 0.13 μm CMOS of an Algorithm Permitting Spectroscopic Imaging with High Spatial Resolution for Hybrid Pixel Detectors," for which he received the best thesis award of the Ramon Lull University Doctoral Program 2009-2010.

In addition to designing the Medipix3 ASIC and implementing the novel charge-summing architecture, Dr. Ballabriga and his colleagues from the Medipix3 Collaboration worked together towards the realization of the full detector system. In the framework of his work, he performed the first characterization of the ASICs starting with electrical stimulus and then with radiation sources. He has contributed to the integration of the ASICs into the multiple readout systems that have been developed by the Medipix3 collaboration members. Dr. Ballabriga has also coached younger designers in the design of front-ends in CMOS technologies.

Rafael Ballabriga holds three patents and has authored or co-authored more than 30 peer-reviewed journal publications.

Citation: *For the implementation of a new approach to spectroscopic X-ray imaging, with registration of photon energies, using semiconductor devices with in-pixel processing for each individual incident photon.*

Rafael Ballabriga can be reached by E-mail at rafael.ballabriga@cern.ch.

GPS TO THE RESCUE

You know your children are growing up when they stop asking you where they came from and refuse to tell you where they're going.

P. J. O'Rourke

2014 Technical Committee Awards

Plasma Science and Applications Committee Awards

PLASMA SCIENCE AND APPLICATIONS AWARD



Michael Desjarlais
2014 PSAC Award Recipient

Dr. Michael P. Desjarlais, a Senior Scientist in the Pulsed Power Sciences Center at Sandia National Laboratories in Albuquerque, NM has been chosen as the recipient of the 2014 IEEE Plasma Science and Applications Award. Mike joined Sandia in 1986 as a member of technical staff where he quickly revolutionized the understanding of high-power ion diode physics through the development of his "ion diode model." When the Sandia ICF program transitioned from light ion beams to z-pinch in 1997, Mike began to explore the electrical conductivity models used in MHD simulations and how they might be improved.

Using data from Professor Alan DeSilva's exploding wire experiment at the University of Maryland, Mike first made semi-empirical modifications to the Lee-More conductivity model that greatly improved the treatment of bound states and electron-neutral scattering. This new Lee-More-Desjarlais (LMD) model had immediate impact on the simulation of wire array z-pinch and magnetically driven flyer plates using the ALEGRA rad-MHD code. The model's improved accuracy also allowed Walt Atcheson at LANL to simulate correctly the observed implosion time of liners on the Pegasus machine. However, as the isentropic compression and flyer plate acceleration experiments on Z became more sophisticated, Mike quickly came to realize that the semi-empirical approach of LMD was not sufficiently accurate.

Mike then had the original idea to use density functional theory (DFT) as the framework for the next generation of electrical conductivity calculations. Using the VASP DFT simulation code, Mike performed a series of ab initio quantum molecular dynamics (QMD) simulations, from which he extracted configuration information to compute electrical conductivities using the Kubo-Greenwood method. His initial QMD conductivity calculations showed a 70% higher conductivity for the expanded liquid aluminum than was indicated with the LMD model. He then performed additional simulations and developed a wide-range model for aluminum. Simulations of the flyer plates on Z with this new model were an immediate success, revealing just the right amount of surviving solid aluminum on impact. This began a new era in the use of simulations to design dynamic materials experiments on the Z machine. Models for stainless steel, tungsten, beryllium, and many other materials were soon to follow.

Building upon this success, Mike leveraged his DFT experience to attempt to calculate the Hugoniot elastic limit of deuterium. Once he discovered that

it was important to converge both the energy and the pressure in these EOS calculations he achieved very good agreement with both gas-gun data and Z data, finding peak compressions of around 4.5. Subsequently, these techniques have been used to study the EOS of a growing number of materials, including the shock melting of beryllium and diamond for the National Ignition Campaign. Mike's pioneering research into the application of DFT to the calculation of electrical conductivity and EOS of warm dense matter has had international impact on research into dynamic materials, pulsed power, Z-pinch physics, laser-matter interaction, and planetary sciences. For this work, Dr. Michael Desjarlais is the 2014 PSAC Award recipient.

Citation: *For pioneering contributions to the understanding of electrical and thermal transport properties, and equations of state for materials at extreme conditions through the use of first-principles density functional calculations, and generating numerous state-of-the-art wide-range conductivity models for use in a broad spectrum of simulation codes.*

Michael Desjarlais can be reached by phone at +1 505 845-7273.

IGOR ALEXEFF OUTSTANDING STUDENT IN PLASMA SCIENCE AWARD



Shurik Yatom,
2014 PSAC Student Award Recipient

Each year, the Plasma Science and Applications Committee selects a winner of the Igor Alexeff Outstanding Student in Plasma Science Award, to recognize outstanding contributions to the field of plasma science and technology. We are proud to announce the 2014 winner is Shurik Yatom from Technion, Israel Institute of Technology, in Haifa, Israel.

Shurik Yatom was born in 1981 and started his studies in 2005 in the Department of Physics in Technion. After graduating "Cum Laude" in July 2008, he joined the Plasma and Pulsed Power Lab in Technion and recently completed the Ph.D. program, performing research on nanosecond discharge in dense gases under the supervision of Prof. Yakov Krasik and Prof. Joshua Felsteiner. Shurik will begin a post-doctoral appointment at the University of Minnesota soon.

His research involves experimental and numerical investigation of nanosecond timescale electrical discharge in pressurized gases, including such phenomena as generation of run-away electrons. Researchers use these kinds of discharge-produced plasmas produced in pulsed laser pumping, effective release of energy from microwave compressors, and switching of low-inductance gas spark gaps. Applications include biomedical treatments, fast combustion of gas mixtures and aerodynamics.

A main breakthrough resulting from Shurik's work is, for the first time, he enabled applied time- and space-resolved visible spectroscopy to study the dynamics of the plasma density. Shurik also carried out, for the first time, precise measurements of

the electric field evolution inside the discharge plasma channel using time-resolved non-disturbing Coherent Anti-Stokes Raman Scattering. The results showed formation of low-density plasma with rather large resistivity, characterized by electric fields with amplitude up to several tens of kV/cm.

Shurik has already co-authored over 12 papers.

COMMUNICATIONS COMMITTEE

A Fresh Look for NPSS



Peter Clout
Communications
Committee Chair

You may have noticed over the last year that we have introduced a new logo for NPSS and also a redesign for the newsletter. In addition, the promotional literature for our Society and activities has been given a graphic make-over.

Under way is a redesign for the web site and by the time this newsletter comes out, the new site should be close to being live. Here we are upgrading the technology behind the site so that it is easier to keep current as well as giving it a new look. Please remember that it is the go-to place for current information.

In all this work, I and other NPSS volunteers have been working with our graphics design company, Cisneros Design. For much of the work, everyone on the AdCom was involved at one time or another but specifically our tireless Secretary and Newsletter Editor, Albe Larsen, and our Webmaster, Dick Kouzes, were most involved and we owe them a round of thanks for their contributions. The basis for the new logo design came from our Vice-President, John Verboncoeur.

For all of these efforts we need excellent quality photographs showing:

- *people at conferences, specifically discussing papers in groups or listening intently to presentations.*
- *people working on equipment that is clearly relevant to the NPSS field of interest.*
- *the exciting and important things we do. This could be pictures of spacecraft, fusion machines, accelerators, detectors and experiments in general.*

Please do not send links to vast libraries, rather point to a few possible pictures in these libraries as you know the source of the images best and can more easily look out the interesting ones and avoid the images should perhaps have been removed. All pictures must have permission to be used by IEEE for professional, non-commercial purposes and providing evidence of this will save time and effort in production.

Peter Clout, Chair of the Communications Committee, can be reached by E-mail at dout@vista-control.com.

FELLOW CANDIDATE EVALUATION COMMITTEE



Jane Lehr
Fellow Evaluation
Committee Chair

The IEEE Grade of Fellow is conferred by the IEEE Board of Directors upon a person with an outstanding record of accomplishments in any of the IEEE fields of interest. The total number selected in any one year cannot exceed one-tenth of one-percent of the total voting membership. IEEE Fellow is the highest grade of membership and is recognized by the technical community as a prestigious honor and an important career achievement. This year, six NPSS members were elevated to the grade of Fellow. Their citations and abbreviated biographies are in the AWARDS section of this issue. Please send them a note of congratulations!

IEEE has been elevating to Fellow a large percentage of the NPSS nominations. This is due in large part to the Evaluation Committee and its insistence on putting forth good nomination packages. A nomination package consists of the nomination form, endorsements and references from other IEEE Fellows. The NPSS Fellow Evaluation Committee receives only the first two parts to perform its technical evaluation of the nominees who declare NPSS as their primary society. The Society Fellow Evaluation Committee's job is to determine a rank order for the candidates and submit it to the IEEE Fellow Evaluation Committee for further scrutiny. NPSS, comprised of eight diverse technical areas, selects the members of the FEC by considering both geographical and technical diversity. This year's members were Prof. Paul Chu (PSAC), Prof. Jeff Fessler (NMISC), Dr. Erik Heijne (RISC), Dr. Richard Kouzes (CANPS), Dr. Jean Luc Leray (RE and TN), Dr. Ned Sauthoff (FT), James Schwank (RE) and Dr. Stan Schriber (PAST). Of course, there are many overlaps among the Committees in technical interests.

Preparation of a high-quality nomination takes a long time. It is not too early to begin considering nominees for the Fellow Class of 2015. In the past, the FEC would be presented with the conundrum that a highly accomplished nominee was submitted for consideration with an ill-prepared nomination form. The FEC, of course, is charged with ranking the candidates and wants to put forth the best nominees. Several years ago, the NPSS FEC realized that the nomination package had to clearly indicate the accomplishments of the nominee and if it did not, it would be reflected in the ranking. Tips for preparing nominations may be found at http://www.ieee.org/membership_services/membership/fellows/. The deadline for nominees to the Fellow Class of 2015 is 1 March 2014. There are many accomplished NPSS members who should be considered for member grade elevation to Fellow. Please consider a nomination!

Jane Lehr, Professor and Chair, Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, can be reached by E-mail at jmlehr@unm.edu.

WELL, WELL!

Suffering isn't ennobling; recovery is.

Christian Barnard

UNCERTAINTY PRINCIPLE

Science has proof without certainty. Creationists have certainty without proof.

Ashley Montagu

ANIMAL HUSBANDRY

The male is a domestic animal which, if treated with firmness and kindness, can be trained to do most things.

Jilly Cooper

SCIENTIST ERRANDRY

We often discover what will do by finding out what will not do; and probably he who never made a mistake never made a discovery.

Samuel Smiles

Liaison Reports

Community Solutions Initiative Summary Report 2013

OVERVIEW



Ray Larsen,
CSI Co-chair

The Community Solutions Initiative started in 2010 working on a community scale 1.5 kW mobile charging station called SunBlazer to serve 40 homes with portable battery kits and LED kit lighting. Later kits were expanded to serve 80 homes. Fifteen SunBlazer units were built in 2011-2012 for deployment in Haiti. The initial pilot of six stations serving 240 homes was very successful and from June-December 2011 clearly demonstrated the sustainability of the franchise business model. Each new initiative consists of NGO partnership development, a donated seed-funded pilot deployment of up to ten charging stations with 80 light kits per station, and a venture-capital or loan-funded phase for each startup to serve at least



Above: Sirona Tech Guillaume demonstrates light kit to new customers.

kits, resulting in malfunctioning units and a loss of revenue over the remainder of 2012. In late 2012 a major program was undertaken to design,



successfully raised significant development funding of their own to proceed with expanding their off-grid programs.

Left: "As we were leaving, school let out and the kids surrounded the car to say hello. It makes me so happy to know that many of these kids are now able to study by electric light instead of kerosene, giving them a brighter today and tomorrow. This is why we do what we do! Here is a shot from inside the car looking out... It makes me smile!" – Michelle Lacourciere, CEO, Sirona Haiti.

build and install a new in-house LVD design into all 600 units in the field. In addition, the Haiti partner needed help to strengthen internal operations with improved management, bridging for lost revenue, field production reporting and financial controls. A major deliverable is a set of Standard Operating Procedures to make the program easily replicated in other countries. The retrofit program was completed in October 2013 and the Go-Forward program successful through early 2014 with SOPs nearing completion and field operations stabilized and running smoothly. For details see www.sironacares.org and www.communitysolutionsinitiative.org

NEW AFRICA INITIATIVES IN FOUR COUNTRIES



Engineer Entrepreneur Mou Riiny with 6 kW PV panels for Village Help South Sudan School.

a million people in the first five years of operation. Seed funding for the Haiti units and subsequent needs for Haiti came primarily from NPSS with significant donations from IEEE Foundation in behalf of several other supportive IEEE operating units such as IEEE Canada, Region 9 and the Humanitarian Technology Challenge. The Power and Energy Society (PES) New Initiatives and Outreach program has provided CSI with a basic operations budget since 2010.

HAITI RETROFIT AND GO-FORWARD PROGRAM

Upon delivery of the second pilot group of nine stations in August 2012, problems were discovered with the Low Voltage Detection circuit of the battery

In August 2012 a CSI Business Development Workshop at the IEEE Power Africa Conference in Johannesburg resulted in three new CSI NGO partnerships in Nigeria, Cameroon and South Sudan who pledged to develop the CSI business model. As of December 2013, a fourth partnership is under development in Kenya. In late 2012 the first three were awarded modest CSI funds to purchase portable battery packs to test the market response to the product on a small scale, pending CSI raising funding to later donate up to ten SunBlazer IIs over the next two years to each new startup. Nigeria, Cameroon and South Sudan already have stationary PV solar generating stations of 3-6 kW for serving portable battery kits or small community microgrids. Programs in Nigeria and South Sudan in late 2013



Michael Wilson and Entrepreneur Engineer Jude Numfor with Torchbearer PV charging station in Cameroon

WORKSHOPS AND CONFERENCE PRESENTATIONS

During 2013 CSI held two major Workshops, one at the IEEE PES General Meeting in Vancouver in July and other at the IEEE Global Humanitarian Technology Conference (GHTC) in San Jose, CA in October. The workshops were attended by 20 and 35 respectively and the five CSI presentations at the GHTC were well received. In November, CSI representatives attended the Energy Africa meeting at the Colorado School of Mines, Golden CO. The conference featured international high-level speakers from the UN, Government, Industry, Universities and many NGO practitioners of sustainable development. Many interesting contacts were made including a Vice President of GE Capital Markets Corporate which is in charge of the \$7B program supporting power generation in Africa announced by President Obama. A smaller follow-up program for strictly off-grid solutions has just been awarded and CSI is following up to make sure it gets consideration for its clearly unique program and business development model.

POSNER INTERNATIONAL CENTER FOR SUSTAINABLE DEVELOPMENT

In July, CSI joined the new Posner Center, a collaboration which has grown to capacity of 55 international NGOs established in over 70 countries. In November after the GHTC, a CSI team of five met at the center for discussions of new educational initiatives championed by CSI member Prof. Dan Wessner of Regis University in Denver. In addition to the embryonic educational aspect, the Posner Center

IEEE FOUNDATION AFFORDABLE ELECTRICITY FUND DEVELOPMENTS

In late 2011 a separate IEEE Foundation Affordable Electricity Fund was authorized; however no major funding has been developed through the fund up to



Green Village Energy Project in Nigeria customers' children thanking IEEE for new community Light Kits.

now. In June 2013 the executives of the IEEE Power and Energy Society (PES), IEEE Foundation and CSI met to propose a major fundraising effort for the envisioned seed funding for ten new initiatives per year. The reason for this growth rate is to meet the goals of the UN Millennium Development Goals in the area of electricity for 1.4 billion people globally. With startup and operating costs this leads to a target of approximately \$3M per year by 2017 to make the CSI program self sustaining. With a kick-start pledge from PES the first stage of the program is underway

includes more than a dozen engineering groups and a half-dozen energy-focused groups such as Eagle Energy, Elephant Energy and Nokera. Discussions have started on future partnering potential with Eagle and Elephant Energy.

SUNBLAZER II

The Sunblazer II design was started in late 2012. The overall design goals are easier portability when roads disappear and turn into trails, more secure design, modular design for easier maintenance, and



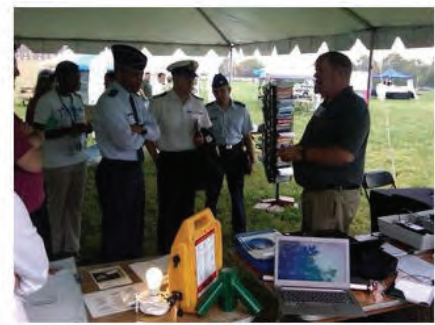
Sirona Operator hands-on training at St. Marc, Haiti

with the hiring of a consulting firm and identification of major individual and potential corporate donors and partners for the seed funding phase. Note that beyond the seed phase, each new initiative pledging the one million people served goal must prepare to raise approximately \$10M each in venture capital investment or loans to meet the desired scaling goals. If the initial phase is successful, the program will likely become a "Signature Program" of the IEEE Foundation with high visibility globally.

lower costs of PV panel mounting system and main chassis. Rather than a trailer, removable wheels are employed and reused, and all mechanical components break down to fit into a standard pickup truck. Progress in 2013 was significantly slowed due to late delivery of the new more economical 10-pack subchargers. However as of end of December 2013 all components for the main chassis are installed and final wiring is in progress. A recent decision was that after field trials in Long Island, NY the unit will be shipped to the Cameroon partner along with 100 battery and light kits currently being assembled in Haiti for the Africa programs.



Sirona also ferries donations of new dresses for orphans made by members of the Episcopal Diocese of San Francisco



Sirona is working with DoD on off-grid initiatives

PLANS FOR 2014

The summary plans are as follows:

- Complete the Haiti reclamation project of 600 portable battery kits and build 600 new light kits for delivery to Africa.
- Complete and test SunBlazer II.
- Document Sunblazer II, portable battery and light kits along with business plan, standard operating procedures, maintenance and operator training instructions.
- Make educational program presentation to IEEE Education Activities Board for Community-Based Online Course demonstration, beginning with immediate technical training needs.
- Contract to start construction of ten new SB-IIs, to be built as funds become available throughout



2014. These units to be provided to 10 different startups, along with light kits, to begin market testing in ten different areas.

- Contract to start construction of additional SB-IIs for up to ten partners as funds become available through Foundation fundraising. These to be scheduled to be delivered to each new startup over a two-year period, a steady-state volume of 20 units per year.

Acknowledgments

CSI has been critically aided by a number of organizations within IEEE, especially PES, NPSS, IEEE Foundation and HTS; by private groups especially Nextek Power Systems Inc. and also

"The (Low voltage Disconnect) retrofit was a massive endeavor. Collecting kits, storing them, transporting them to the retrofit facility, and many hours required to test and retrofit every kit. Sirona owes a great deal of thanks to many people who helped with this project. We are especially grateful to the IEEE for seeing the retrofit through. Sirona's Operators have patiently waited for repairs and are excited to see their inventories rising again. This was a setback, but Sirona is ramping back up and preparing to quadruple the number of homes we serve within 18 months." – Michelle Lacourciere, CEO Sirona Haiti. [Note: As of December all retrofit kits were deployed successfully and 11 of 14 stations running at capacity.]

Russell Engineering; and by partners including NGOs Sirona Haiti, Green Village Energy Project in Nigeria, Torchbearer in Cameroon, and Village Help in South Sudan; and finally by all the leadership and countless volunteers associated with CSI and working within all of the above organizations. Their achievements to date are truly remarkable. CSI is also enriched association with the new Posner Center and its 55 International NGOs and partnering Universities.

Ray Larsen, CSI Co-chair, can be reached by E-mail at larsen@slac.stanford.edu



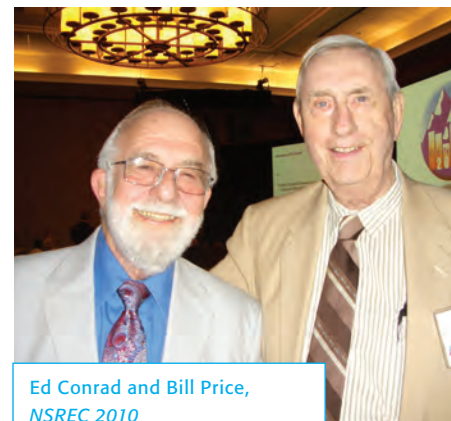
Hundreds of Portable Charging Kits collected for retrofit of LVDs

ARTICLE

NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE TURNS 50!

EARLY DAYS OF THE RADIATION EFFECTS COMMITTEE

I would like to tell about the really earliest days of the IEEE Nuclear and Space Radiation Effects Committee. I can do this because I was there. There aren't many of us left from those days.



Ed Conrad and Bill Price, NSREC 2010



William E. Price

By William E. Price, JPL Retired

My own radiation effects work started in 1953 at the Naval Research Laboratory. We had a small group testing electrical insulation materials for electrical property changes using Co₆₀ gamma rays and electrons from a 2 MeV Van de Graaff machine. Our leader, Emanuel Brancado, formed a subcommittee called Radiation Effects to Electrical Insulation Materials as part of the American Institute of Electrical Engineers (AIEE) Electrical Insulation Committee. I followed him as chairman of the subcommittee several years later.

The IEEE was planned and formed in 1962 during a joint meeting of the Institute of Radio Engineers, the IRE, and the American Institute of Electrical Engineers, the AIEE. The official date of formation is January 1963. It was at a 1962 meeting that the "Radiation Effects Committee" was formed by joining two committees together. One Chaired by Dr. John Winslow under the Nucleonics Committee of the IRE and one chaired by me, the "Radiation Effects to Electrical Insulation" under the AIEE. We had been holding meetings jointly for a couple of years prior to 1962. We did this because at that time there were not very many companies doing radiation effects work. We would have these joint committee meetings where perhaps five to seven people would show up. We would ask around the table "Who knows somebody who could give a technical paper?" By that process we would get a session of five or so papers to present at a major meeting of our society.

In 1961 John and I decided to try something different. We prepared a one page flyer as a "Call for Papers" and we sent it out to all the companies that we knew that did Radiation Effects work. These included General Atomics, Naval Research Laboratory, and Bendix in Michigan, Boeing Radiation Effects Laboratory, Sandia Laboratories, RCA Labs in New Jersey and a few others. We were delighted to receive 28 abstracts of which we accepted 25.

John and I did all the prep work. We got time at the AIEE Summer Meeting in Denver for five sessions. We secured session chairman, sent papers out for review and made all arrangements. John and I always considered that meeting as the real start of the Radiation Effects Conference. However that was prior to the birth of the IEEE.

One amusing event at that conference was that one session chairman had to introduce a paper authored by Dr. Calvin Hogg. The session chairman was Dr. J. C. Pigg of the Oak Ridge National Laboratory. He introduced Dr. Hogg as his "country cousin."

At the 1962 meeting in Toronto we had things to decide. We considered becoming a separate Society under the new IEEE. But the Nucleonics Committee Chairman, Dr. Warren Witzig, of the IRE lobbied to have several technical Committees with radiation-related themes under the title of "Nuclear Sciences Group." We agreed to join them as the "Technical Committee on Radiation Effects." There were changes in titles over the next few years. The Nuclear Sciences Group became the Nuclear Sciences Society. Later it became the Nuclear and Plasma Sciences Society as it is today.

PERVERTED PROTECTIONISM

We must protect the rights of minorities, and the rich are always fewer in number than the poor.

John A. Macdonald

NOT THERE YET!

An expert is a person who avoids all the little mistakes on the way to the big fallacy.

Pete Seeger

LISTEN TO ME!

There are some that only employ words for the purpose of disguising their thoughts.

Voltaire

THE BOTTOM LINE

Conscience gets a lot of the credit that belongs to cold feet.

Anonymous

WHO IS KNOCKING ON MY DOOR?

We are all faced with a series of great opportunities brilliantly disguised as impossible situations.

Charles R. Swindoll

NO WINNER - YET

Human history becomes more and more a race between education and catastrophe.

H. G. Wells

BUT IT IS IMPORTANT!

In a conversation keep in mind that you're more interested in what you say than anyone else.

Andrew Rooney

EASY DOES IT

Their [teenagers] experience raises a question for us all: are we leaving enough time to take one's time?

Shelly Turkle

WHAT WAS THE CHILD'S PROBLEM?

... the child was taken to the Alberta Children's Hospital by paramedics with a minor facial injury.

National Post

CONSERVATION

I started with nothing and still have most of it left.

Anonymous

FROM YOU TOO!

Honest criticism is hard to take, particularly from a relative, a friend, an acquaintance, or a stranger.

Franklin P. Jones

ONLY BRIDGE PLAYERS?

Bridge players exist mainly to make life difficult for each other.

Omar Sharif

WHAT GOES IN MUST GO OUT

Canada is like an old cow. The West feeds it. Ontario and Quebec milk it. And you can well imagine what it's doing in the Maritimes.

T. C. (Tommy) Douglas (former Saskatchewan premier)

WHY WE ARE WHERE WE ARE

With exceptions so rare that they are regarded as miracles and freaks of nature, successful democratic politicians are insecure and intimidated men. They advance politically only as they placate, appease, bribe, seduce, bamboozle, or otherwise manage to manipulate the demanding and threatening elements in their constituencies. The decisive consideration is not whether the proposition is good but whether it is popular not whether it will work well and prove itself but whether the active, talking constituents like it immediately. Politicians rationalize this servitude by saying that in a democracy public men are the servants of the people.

Walter Lippmann (1955)

FUNDAMENTAL POINT

I would argue that what the country needs today is a little serious disrespect for the office of the presidency; a refusal to give any more weight to a President's words than the intelligence of the utterance, if spoken by anyone else, would command; an understanding of the point made so aptly by Montaigne: "Sits he on never so high a throne, a man still sits on his bottom."

Arthur M. Schlesinger (1973)

PREDICTION

Astrology proves just one scientific fact: there's one born every minute.

Patrick Moore

...LEADING TO VALUES

Science is a differential equation. Religion is a boundary condition.

Alan Turing

ASK ME NO QUESTIONS AND I'LL...

The things most people want to know are none of their business.

George Bernard Shaw

OBITUARY

Dr. Robert J. Barker, Col., USAF (Ret.)

The Nuclear and Plasma Sciences Society (NPSS) lost an outstanding visionary and steadfast champion of plasma research when Robert Barker died on 15 December 2013.



Col. Robert Barker

Bob earned his BS in Physics from Stevens Institute of Technology in 1971 and his Ph.D. in Applied Physics at Stanford University in 1978, studying computational plasma physics under Oscar Buneman. Bob next spent a year as a Policy Affairs Fellow at Stanford's Hoover Institute and a second year as a Congressional

Staff Member in Washington, D.C. He then worked for three years at NRL (through JAYCOR) and another three years at Mission Research Corp. as a computational plasma physicist.

During this period he was an Air Force reservist, eventually assigned to the Physics Directorate of the Air Force Office of Scientific Research. While at AFOSR, he was promoted to Colonel and became Senior Reservist. His contributions to the Air Force as a reserve officer are too many to be listed here. Bob was a true patriot in the best sense of the word.

As a reservist, Bob often filled in for the Plasma Sciences program manager and did such a superb job that he was asked to join AFOSR as a full-time civilian staff member. He rapidly became the nation's principal funding agent for basic research in high-power microwaves (HPM), including relativistic magnetrons, plasma-filled microwave sources, multiple-beam klystrons, and many other concepts. In parallel, he strengthened the vacuum-electronics community and built ties between it and the HPM community. Bob also fostered basic research in weakly ionized cold plasmas for a variety of applications, such as materials modification, plasma-assisted combustion, emissions control, and biological applications. Bob funded the pioneering studies in plasma and pulsed-power biomedical applications. As explained by Mounir Laroussi, Bob "inspired all of us working in the field and proved to us that someone really



Bob Barker, promotion to colonel

cared about our work and believed in its usefulness. I believe that I speak for all the community active in low-temperature plasma physics and specifically its biomedical applications when I say that we are all grateful to Bob for his moral and financial support, and most importantly for his vision."

Bob especially cared about students, often finding extra funds to support more students in promising research areas. With collaborators, he published three widely read books (High Power Microwave Sources and Technologies, Modern Microwave and Millimeter-Wave Power Electronics, and Non-Equilibrium Air Plasmas at Atmospheric Pressures) and donated royalties to student travel programs. He also worked to ensure that simulation software was available to university

researchers, funding PIC code development and establishing users' groups.

Bob contributed directly to NPSS in many ways. He served several times on the Plasma Science and Applications (PSAC) executive committee, including as chair in 1994 - 1995. In that role he successfully encouraged a previously independent pulsed-power group to become an NPSS technical committee and then arranged periodic cosponsorship with it of joint Pulsed Power and Plasma Science (PPPS) conferences. He was a co-chair of the first of this series, in 2001. He was a Transactions on Plasma Science Guest Editor and often a reviewer as well. He was recognized by the 2009 PSAC Award "For more than two decades of visionary leadership in the fields of nonequilibrium air plasmas, compact pulsed power, and high power microwave/millimeter-wave electronics." (See page 30 of the September 2009 issue of the NPSS Newsletter for a more complete description of Bob's many accomplishments.) He was elected a Fellow of the IEEE and of the Air Force Research Laboratory.

Throughout those many years of outstanding work, Bob was supported and encouraged by his loving and devoted wife, Fran. He is survived by Fran; his daughter, Angie; his mother, Frieda; and his sister, Janet.

Brendan Godfrey, who prepared this obituary, can be reached by E-mail at brendan.godfrey@ieee.org.

PROCRUSTES WAS FIRST!

The very powerful and very stupid have one thing in common. They don't alter their views to fit the facts. They alter the facts to fit their views, which can be very uncomfortable if you happen to be one of the facts that need altering.

Doctor Who

BUT IT TAKES LESS EFFORT

Permissiveness is the principle of treating children as if they were adults; and the tactic of making sure they never reach that stage.

Thomas Szasz

RIGHT!

For every problem there is a solution which is simple, neat, and wrong.

H. L. Mencken

WE HAVE IGNITION

Knowledge is said to be power; and it is power in the same sense that wood is fuel. Wood on fire is power. Knowledge on fire is power.

Henry Mackenzie

LIGHT HEADED!

Having money is rather like being a blond. It's more fun but not vital.

Mary Quant

I THINK SO

Scientists believe in proof without certainty: most people believe in certainty without proof.

Ashley Montagu

AT THE SAME TIME?

One has two duties - to be worried and not to be worried.

E. M. Forster

STUFF IT!

The trouble with having an open mind, of course, is that people will insist on coming along and trying to put things in it.

Terry Pratchett

NEIMAN MARCUS, PERHAPS

Whoever said money can't buy happiness simply didn't know where to go shopping.

Bo Derek

EXCUSES, EXCUSES

Never let your sense of morals get in the way of doing what is right.

Isaac Asimov

MONEY SPEAKS

I thought I wanted a career. Turns out I just wanted a pay cheque.

Poster in Los Angeles office

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Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor by April 5th, 2014 for publication in the June 2014 Newsletter.

News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical breakthroughs, accomplishments at the big laboratories and similar subjects. The various *Transactions*, of course, deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

Advice on possible authors or offers of such articles are invited by the editor.

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